topics

Inbox

tshingombe fiston <tshingombefiston@gmail.com> 11:34 AM (51 minutes ago)

to me

Feedback on Security Service Provider Application and Complaint Process

Application for Exemption Terms of Section 23(6)

Key Points:

- Applicant Information:
  - Full Name: Tshingombe Fiston
  - Date: January 18, 2025, 6:36 PM
  - Contact: Not provided
- Application Details:
  - Terms of Section 23(6) of the Private Security Industry Regulation Act 56 of 2001.
  - Despite Section 23(1) and (2), the authority may register any applicant as a security service provider on good cause shown.
  - Requirements include applicant's age, training, and clearance of any criminal offenses in the last ten years.

Particulars of Appellant:

- Full Name: Tshingombe Fiston
- Contact Address: Not provided
- Refusal Reasons:
  - Refusal to grant application for registration.
  - Refusal to renew registration.
  - Cancellation or suspension of registration.
  - Conviction of improper conduct.

Complaints Management Process:

- Statutory Mandate: Derived from the Private Security Regulation Act 56 of 2001.
- Complaint Definition: Dissatisfaction reported to PSIRA regarding the quality of service rendered by a private security service provider.
- Complaint Handling: Complaints are processed, referred, or dealt with by PSIRA in accordance with the code of conduct and statutory mandate.

Security Equipment Definition:

- Types of Equipment:
  - Alarm systems, safes, satellite tracking devices.
  - Intrusion detection, access control, bomb detection, and fire detection devices.
  - Security containers, X-ray, and communication devices.

Improper Conduct:

- Examples:
  - Operating without registration.
  - Deploying unregistered security officers.
  - Failure to meet training and uniform standards.
  - Non-payment of prescribed wages and allowances.

Complaint Resolution:

- Time Frame: Standard period to finalize any complaint is 30 to 90 days.
- Common Complaints: Include wage disputes, improper conduct, and training deficiencies.

Digital Records:

- Last Updated: 12-05-2022
- Batch Numbers:
  - Batch 383731: Pending since June 28, 2024.
  - Batch 383732: Termination pending since June 29, 2024.

Job Career Information:

- Current Status: Application for registration as a security officer in progress.
- Job Requirements:
  - Basic salary, education qualifications, and employment history.
  - Ability to work under pressure and interpret legislation.
  - High administrative skills and problem-solving abilities.

Investigation and Complaints:

- Details of Complaints:
  - Complainant Name: Tshingombe Fiston
  - Incident Date: July 14, 2023
  - Nature of Complaint: Dismissal from job, irregularities in exam processes, and issues with certification.

Legal and Administrative Actions:

- Court Cases:
  - Labour court cases and appeals.
  - Complaints lodged with various authorities including the Office of the Chief Justice.
- Outcomes:
  - Pending decisions and unresolved issues.
  - Requests for reviews and rescission rulings.

Training and Development:

- Police Community Support Officer (PCSO) Training:
  - Duration: One month initial training.
  - Key Areas: Radio procedures, evidence gathering, crime scene management, human rights, and diversity awareness.

Student Placement Programs:

- Areas of Placement:
  - Financial crime investigation.
  - Estate and asset management.
  - Construction and building engineering.
- Essential Skills:
  - Planning, organization, communication, technical skills, and teamwork.

Expression of Interest and Withdrawals:

- Record of Interest: Successfully withdrawn from certain roles.
- Feedback: Encouraged to explore other opportunities within the organization.

Freedom of Information Requests:

- Recent Requests:
  - Request for validation and information under the Freedom of Information Act.

- Requirements for resubmission and personal data verification.

Integrity and Defense:

- Research Focus:
  - Issues related to justice, education, and low development.
  - Emphasis on technological support and criminal investigations.

Summary:

- Feedback: Comprehensive review of the application, complaint process, and training details provided. Emphasis on proper documentation, clear communication, and adherence to statutory mandates.

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tshingombe fiston <tshingombefiston@gmail.com> 11:36 AM (48 minutes ago)

to me

Feedback on Various Topics and Processes

NQF Monitoring and Irregularities

Key Points:

- **Monitoring Issues:** Umalusi monitoring in terms of policy and sections 17 and 18 of the General and Further Education and Training Quality Assurance Act 2001 (Act No. 58 of 2091).
- **Student Records:** Integrated information system to provide proof of qualifications for

part-time students.
- **Remuneration and Employment:** Governed by the Future Educator Act 2006.

Irregularities:

- **National Certificate:** SAQA includes part-time qualifications.
- **Portfolio:** Collection of evidence for students.

Judgement and Assessment

Key Points:

- **Judgement Need:** Describing evidence learning view group lecture approach to assessment.
- **Policing Learner Overview:**
  - Introduction to crime information management system.
  - Crime prevention principles and applied communication in policing.
  - Investigative principles and professionalism in policing.

Community Policing:

- **Framework:** Community policing involves a proactive, problem-oriented approach with interrelated roles of law enforcement officials.
- **Creative Law Response:** Policing strategies and tactics are introduced to address underlying causes of crime.

Assessor Training and Work-based Assessment

Key Points:

- **Purpose:** Guide to learning material and assessment protocols.
- **Work-based Holistic Assessment Model:** Includes planning, activity forms, and witness testimony.
- **Assessment Standards:** Emphasize validity, authenticity, reliability, and standardization.

Portfolio Assessment:

- **Components:** Collection of evidence, assessor comments, and learner reporting.
- **Technical Competency:** Shown through project reports and presentations.

Research and Methodology Assessment

Key Points:

- **Overview:** Research design and methodology for CAPS, NCV, trade, UCPD, SETA, and SASSETA.
- **Participants:** Teachers and HODs' responses to research findings.
- **Recommendations:** To the Department of Education (DBE) and DHET.

Ethical Considerations:

- **Research Design:** Includes literature review, data collection, and analysis.
- **Teacher Roles:** Attitudes towards integrating technical subjects in civil technology.

Library Research and Grant Proposals

Key Points:

- **Grant Proposal:** Submission details for non-profit and research proposals.
- **Request for Proposal Template:** For qualifications and award certificates.
- **Project Overview:** National system examination and qualifications framework.

Case Studies:

- **Electro Energetical Stability:** Reports on rural sector safety and resource management.
- **Training Support:** For learners in electro energetical systems.

Project Goals:

- **Workplace Training:** Regulation and irregularity in attendance and outcome criteria.
- **Resource Allocation:** Value breakdown and retrospective cost projections.

Summary

Feedback:

- **Comprehensive Review:** Covering various topics including NQF monitoring, judgement and assessment, assessor training, research methodology, library research, and grant proposals.
- **Documentation:** Emphasis on proper documentation, clear communication, and adherence to statutory mandates and assessment standards.
- **Recommendations:** To improve processes and address irregularities in the education and training systems.

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tshingombe fiston <tshingombefiston@gmail.com> 11:39 AM (45 minutes ago)

to me

ISC2 Security Congress 2025 Proposal

Submission Details

- **Submission Type:** Call for Papers Proposals
- **Presentation Proposal Status:** Complete
- **Presentation Proposal ID:** 2070815
- **Presentation Proposal Title:** Thesis Master Engineering Thesis Master Doctoral Engineering Electrical Subject Curriculum Framework Qualification Education Technology

Speaker Information

- **Speaker Name:** Tshingombe Tshi Tshitadi
- **Role:** Facilitator
- **Pronouns:** He/him/his

Presentation Proposal Details

Audience Experience Level

- General (Everyone will obtain value)
- Early (0-3 years)
- Mid (4-9 years)
- Senior (10+ years)

Audience Career Track

- All
- Engineering/Architecture
- Management/Executive
- Operational/Tactical

Preferred Presentation Type

- Breakout Session
- Bright Ideas Roundtable

Full Description

Proposal of Thesis Content / Final Project

Content:

1. Name of Thesis
2. Index
3. Introduction
4. Description
5. General Analyzing

Key Differentiator / Originality:

- Description: At the heart of solutions to framework qualification and national trade implementation sub-sector training. Trainer experimental workplace industrial, more students and institutes, college trade years external internal work value increase price macro.

Content Area:

- Governance, Risk, and Compliance (GRC)

Additional Details/Supporting Information

- Recommendation/Endorsement:
- 3.4 Synopsis of Content: The stability design, projection system trade marketing board, information system electrokinematic dynamic physical state engineering science introduction, used to trade theory electrical, manufacture process inventory low stamp system low stable loadshedding week manufacture.

What prompted you to submit a proposal?

- Email

Have you presented this session or content at any other conferences, webinars, or events?

- Yes

If Yes, what other conference(s) or event(s) was this content presented at?

- 3.4 Synopsis of Content: The stability design projection system trade marketing board, information system electrokinematic dynamic physical state engineering science introduction, used to trade theory electrical, manufacture process inventory low stamp system low stable loadshedding week manufacture.

Prior Speaking Engagements/Experience:

- Engineering

Webcasts, Podcasts, & Videos:

- 3.4 Synopsis of Content: The stability design projection system trade marketing board, information system electrokinematic dynamic physical state engineering science introduction, used to trade theory electrical, manufacture process inventory low stamp system low stable loadshedding week manufacture.

Books, Papers, Etc.:

- 3.4 Synopsis of Content: The stability design projection system trade marketing board, information system electrokinematic dynamic physical state engineering science introduction, used to trade theory electrical, manufacture process inventory low stamp system low stable loadshedding week manufacture.

Would you like to be contacted about additional opportunities to contribute as a speaker or writer for other ISC2 programs?

- Speaking on Webcasts
- Speaking at other Virtual Events
- Speaking at Future Security Congress
- Speaking at In-Person Events
- Speaking at ISC2 Chapter Events
- Authoring Content for Magazine Articles/Newsletter/Blogs
- Authoring and/or Reviewing Content for Professional Development

Would you like to be part of a speaker database, made available to ISC2 Chapters?

- Yes

Additional Demographics Collection Questions

ISC2 is committed to ensuring the cybersecurity profession is as diverse, equitable, and inclusive as the world we serve.

- **Age:** 45-54
- **Nationality:** Congolese (DRC)
- **Gender:** Man
- **Pronouns:** He/his
- **Ethnicity/Race (US):** American Indian or Alaska Native
- **US: If you selected "Other ethnic group", please list it below:** Black
- **Ethnicity/Race (UK):** Mixed or Multiple Ethnic Groups (White and Black Caribbean, White and Black African, White and Asian, Any other Mixed or Multiple ethnic background)
- **UK: If you selected "Other ethnic group", please list it below:** UK
- **Highest level of education (US):** High school graduate, diploma or the equivalent (for example: GED)
- **Highest level of education (UK):** College or university
- **Preferred spoken/written language:** English
- **Do you identify as a member of any of the following groups?** Veteran or Prior Armed Forces Service

Deadline

All submissions must be received no later than 11:59 p.m. ET on Feb. 28, 2025. Deadline subject to change per the discretion of ISC2.

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t

tshingombe fiston <tshingombefiston@gmail.com> 11:43 AM (42 minutes ago)

to me

ISC2 Security Congress 2025: Call for Presentations

Your Feedback

Submission Details

- **Date Submitted:** Dec 27, 2024, 9:10 AM
- **Feedback ID:** [Not provided]
- **Submission Type:** Call for Papers Proposals

Presentation Proposal Status

- **Status:** Complete
- **Presentation Proposal ID:** 2070815
- **Title:** Thesis Master Engineering Thesis Master Doctoral Engineering Electrical Subject Curriculum Framework Qualification Education Technology

Speaker Information

- **Speaker Name:** Tshingombe Tshitadi
- **Role:** Facilitator
- **Pronouns:** He/him/his

Feedback Content

Overview of Topics Submitted

Locksmith / Safe Technician

- **Management Skills:** General management skills applied to the role of locksmith and safe technician.
- **Health and Safety:** Emphasis on applying health and safety standards in the workplace.

Traffic Management

- **Vehicle Identification:** Accurate identification of vehicle types and configurations.
- **Operational Procedures:** Data captured and assessed according to standard operational

procedures and legislation.
- Road Traffic Management: Includes traffic signal design, installation, and maintenance.

Electrical and Electronic Engineering

- Professional Skills: Usage of digital electronics, advanced telecommunications, and data transmission systems.
- Maintenance and Repair: Installation, maintenance, and repair of electrical and electronic systems.

Traffic Signal Installation

- Planning and Design: In-depth planning and design by skilled professionals.
- Operational Supervision: Effective supervision and control during installation to ensure compliance with specifications.

Security Practice in Education

- Security Concepts: Introduction to basic security concepts and administrative procedures.
- Criminal Investigation: Overview of criminal investigation techniques and the role of technology in security.

Labour Relations and Mediation

- Pension Funds Act: Application of the Pension Funds Act to the administration of retirement funds.
- Labour Conciliation: Conducting conciliation processes and understanding labour relations legislation.

Skill Development in Legislation and Training

- Sector Training Authorities: Emphasis on skills development and adherence to safety standards.
- Workshop Tools: Proper use and maintenance of workshop tools in various engineering tasks.

Additional Comments

- Diversity and Inclusion: Emphasis on ensuring the cybersecurity profession is diverse, equitable, and inclusive.
- Demographic Information: Collection of demographic data to assess representation and improve processes.

Recommendations

- **Continued Education:** Importance of continuing education and skill transfer in various fields.
- **Practical Training:** Emphasis on practical training and on-the-job experience to ensure comprehensive skill development.
- **Feedback:** Detailed and constructive feedback provided to improve future submissions and ensure alignment with ISC2 standards.

Conclusion

Thank you for submitting feedback to ISC2 Security Congress 2025. Your detailed insights and recommendations are highly valued and will contribute to the ongoing improvement of our processes and programs. We look forward to your continued participation and engagement in ISC2 events.

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tshingombe fiston 11:46 AM (38 minutes ago)

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tshingombe fiston <tshingombefiston@gmail.com> 11:50 AM (34 minutes ago)

to me

ISC2 Security Congress 2025: Call for Presentations

Your Feedback

Submission Details

- **Date Submitted:** Jan 18, 2025
- **Submission Type:** Call for Papers Proposals

Presentation Proposal Status

- **Status:** Complete
- **Presentation Proposal ID:** [Not provided]

Speaker Information

- **Speaker Name:** Tshingombe Fiston
- **Role:** Project Lead
- **Pronouns:** [Not provided]

Feedback Content

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10/27/2024, 12:52 PM

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2 of 18

Your request

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Details of your enquiry

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Career journalism networks administration technical liason technical writing web editing . - bachelor's of science in biomedical,saw I'd : 6275 NQF , Level: career scientifice communication technical position in laboratory project management academic research. Management science communication technical , - bachelor of science honour information technology , .ID saqa : 84566 ,NQF level 8 . Career opportunities: academic it manages programming project administrator specialise Technical position position in data mining and entrepreneurship architecture system analyse ---------- Faculty of commerce and low ,saqa 48858 NQF level , admnistration:career opportunities business business consultant economist entrepreneurs.- bachelor of commerce in accounting: Career auditing budget financial management ,tax consultant account charted financial cost . - bachelor's commerce hr manager consulting personnel consultants recruitment training and development employment relations manager and count. - bachelor's of commerce low business administration entrepreneurs politics . - saqa I'd commerce in marketing manager I'd 488822 advertising sales manager marketing Anat media ,to - tourism management is eco, tourism planning event strategies, market research bachelor's of commerce in business management,saqa ID 84326 NQF level 8 counseling entrepreneurs management. ---------- Faculty engineering: Bachelor Nated saqa I'd lecture learner Bachelor nated trade engineering trade Distance :level 7, degree I'd: instituts engineering council engineering electrical instituts engineering Bachelor: Faculty, police police instituts Saqa instituts: level 7, degrees Bachelor:----------trade sector training trainer bachelor's Serta ,seta career opportunities guide schools leavers , university of technology,and university leaver,and college leavers . Career ICT : information communication , technology ICT: technical skills research design development testing installation commissioning maintained product software prodt modem via media land wireless.. - computer. |NQF|4|5|6|7|8| total req networking|lev3|. | | Occupation code 263101: developm program 261302 ICT business analyst 261303 ICT customer support officer 313104 computer system technical 263193 system ,test engineering ICT : securite special ICT : project manager ICT : sales represent - systeme representative system analysis project , database admnistration telecommunication,web development network _____ ICT Microsoft office Occupation | recommend It| recommend -13510-projec| language,c#,have,ado,asi,nsd Management| Database ,Oracle,htk,sap java,net .. - 31314 , systeme techniciens| hardware at, ICT support engineering PC network and Eng - description of the top ICT occupation: Project plan organise direct control co-ordinate qualifition account day to day operations of resourcing schedule priority. Task : skill analizing need. - software engineer design modified documents test implementation installation software support with . -ict : assurance ,create maintence manage quality assurance functionalite performance of PC audit ensuring compliance accreditation scheduled qualifications inspection analysed review system data docut, identified potential risk area in security non compliance with stolen detect. - network ,systt plan deployment test optimisation taking responsibility analizing interpretation data model in developm research monitoring assessing improve network , provided network performance. - ICT securite special established organisat ICT securite procedures ensure prevention recovery strategy internal exterior , ensure prevet recovery strat . - customer support Offit provide support Education developm maintence infrastructure resolution technical problem issue may work. - determined hardware response program to meet usase installation appropriate soft , implementation PC network,repairs performance. -business selling compagny

using director ,quotat price record order ,monitor client competition active maintenat submitted record business. - continuing and training,act No16 of 2006 amendment,NQF ,act No 67 of 2008 ,as amended , determination phase N1-N3 term ,sect 42(1)(a) training dhet ,N1-N3 juanert ,2024 , dr zimande trade test ,trade occupation revise..---------- -testability checklist at the schematic level. - testability checklist at the PCB layout level , - revising design. Win existing ICT creating a test point report manufacture.,PC designer PCB relay project status information,PLC. - PLC wiring ,main breaker switch busbar circuit breaker SMP digital input output analif input terminal. -reaning PLC wiring diagram, profit bus communication PLC , digital input card diagram ,PLC digital -1. requirement: .letter experimental work based log activities theoretical practical school institutes employees learner , orientation practical school disciplinary didactic work based, -1.1 explanation assessment :trade claim inventory low Triggered: gitlab,/ GitHub /azure Issue test .. -Triggered electronic elektor technologies -Circuit microcontroller ,, -Gitlab ,fail running Issue kananga ,, Engineering tshingombe Project ,committed contributing ,code source ... 36..Explanation: gitlab ,GitHub azure data ,work Running -projects , pinned , issues,merge , request, contributors analytic , -repository analyse: Manage,plan ,code , building, secure, deployed, operate , monitoring. -measured in byte code exclude generated . - percentage , ,- coverage static for main mars 26-jun 24.. September Bi Weet code covered. Commit statict for main may 09-june 24.-august -total 4 commit , average per day , authoritie. Drag up date kananga5 .. overview commit pipeline., assignment, review milestone,time participate: Issues... Project code source , Marketing ---------- Azure :,work item ,epic printed Pipe line , ,test pipe -measure in byte: project existing Engineering tshingombe _____ -github : tshingombe Issue contribution, Repository: run project code data source Pipeline: Repository: -Dhet St peace college running projection: Contribution GitHub collectivity; __---------- -38. pratical school: instituts research and development learner lecture vocational - isita project back log dhet and DBE umalusi : pratical school trade experiemental workbased Teaching learning student assessor , student educator technical trade student trainer training student learner facilitator technical ,student : engineering businesses study, Isita project subject engineering electrical : national examination learner topics examin: Time table examination ,n3to n6 orientation industrial , plant operations, electrotechnology ,electric trade theory conduct assessment - project isita project total grand : experiemental theoretical and practical,engineering ,orientation industrial trade theory ,orientation industrial plant operations, orientation industrial electrotechnology -Project low examin rules ,in dhet in high school orientation assessment teaching workplace workshop technologie electrical , technologie construction,technologie ,grade 1to grade 12 technologie, Educational technologie circulum,grade 1,6teach pratical skill trade ,,9-12 teaching orientation technologie electrotechnology, organisation supervisor planing manager supervisor Phase circulum,module conductor, insulation,matter ,AC ,DC current ,AC machine ,DC machine instrument, transmission rectified -Teaching orientation industrial class: grade period basic workshop Orientation . -workplace experiemental relate: explanation , isita in dhet in DBE teaching workshop work class engineering vocational career Guidence -Framework work qualification saqa: Undertake material engineering , Teaching qualify n3subject isita project Council trade, orientation industrial trade occupation trade isita workplace manufacture city power power: technology trade electrotechnology letter topics CVS ,, in DBE teaching technical

DBE orientation industrial Eskom ..city power -organisation supervisor duty Eskom city Power Under printed learner assessment self assessment peer in dhet project. ,in dbe teaching grade circulum, orientation industrial Eskom expo science : teaching teach grade electrotechnology orientation, electrotech industrial ,social project computer Back log project skill fund .. ,- orientation industrial CDs ..close tendered-lesson social worker practice Marksheet student orientation industrial time table ,student organisations planing supervisor time table , student educare time time table , student Education,student Engineering studies time table, : student policing traffic , business, pratical office school student marksheet workplace experiemental learner close bid : close material trade theories in dhet in DBE isita ..umalusi - DBE subject workshop grade to working CVS circulum study in trading isita _____ - teaching and lecture Irregularite Pratical material candidate processing learn Regulation back log after Assessment center -non attandance subject appear letter application letter workplace in dhet conduct learner project in dhet Afric instituts training shalom traing ,out mark term Non attandance: subject non registered Irregularite material: subject engineering science , mathematics,electrotechnical , industrial electronicien dhet in DBE ,ucpd Record academic years . -Total subject ,to back log project Management system information learn , policy in DBE trade theory subject registration second additional subject Rwiten subject : extra circular in dhet in DBE pratical regulation . - practice police , orientation life teaching , literature mathematics ncv teach vocational guidance in DBE level 4 certificate pratical skilled panel control wiring electrical DBE workshop development: teaching workplace to trade in DBE panel ,,teach ucpd irregularity project back log printed ... Introduction technologie,workshop electrotechnology , electrotechnic, electromechanical manufacture process 1.3purpose: -planta d shop layout , -insustrial safety , -ferrous materials , -non ferrous materials. -meeting furnaces -properties and testing of metals -heat treatment carpentery . -patter. and core making -foundry tools and equipment -mold and core making . -casting -forgi g . -hot working of metals . - cold working , Sheet metal work,lathe machine drilling plane and sloping -powder metalling . - inspection quality 2.explanation :Manufacturing Engineering: process planing , Claim 2.1 process planing , 2 process sheets, 3 route sheet ,tooling , 5 cutting tools machine tools , traditional,numerical jogs and fixture ,7 jigs and mould ,manufacturing information generation , CNC port program ,10 robor programmers ,11 flexible manufacturing systems ,FM's group , integrated manufacturing cm. -3. Explanation:Production process : process planing. Manufacture process , classification of manufacture row , -primary shopping process size casting melting . -secondary machining process job understanding operational hot working processing forging rolling hot sprinning extrusion hot drawing. 4.explanation cold working process : Cold forging cold rolling heading cold drawing wire stretch forming ,sheet metal working Piercy punching lancing notche. ,coming sequence ,deep drawing. -5.explanatiin join process: reffiling assembly, welding platisc or fusion , -soldering reverting screwing welding plastic,press fitting sinter , bonding shrinking fitting ,explosive welding diffusion welding key and cotter ,coupling and nut and bolt joint .- surface finishing process. -6 explanation:honing lPpi g supper finishing belt grinding, polishing tumbling spraying ,pouring inorganic coatic analizing ,sherodizing parkerzi g galvanizing plastic ,metallic . -7 product simplification and standardization: policy a counting procedure personal policies performance evaluation control of expenditure safety aspect security procedure regulation,design manufacture material and part supplies ,methods of testing drafting method abbreviations -inspection and quality control ,size

shape other dimensions involved measure. -mechanization and autonomy Control device increased productivity reduced cost of labour and dependence on labour short improve quality reduce in process inventory reduce dependence on operator in tease safety reduce risk humans fixed automation programmables automation flexible automation . -fixed automation cam . - Product system , manufacturing system . Detailed design prototype development test simulation design manufacture. - computer manufactt..- - factory level production management planing , production management material Requirements planing . - bill of materials capacity planning , inventory - CIM technologt compl networks system design and analysis distribution process , modelling and simulation expert system quality engineering. - CAD :soliD modelling variation computer .-meeits of a good plant layout , reduce machine how workflow process inventory is , manufacture time relatively less floor area is required , material handling is less. - explain types of layout ,fixed or position -men tools component yes , workplace yes ,finished product to store - explanation S.No| line or product layout | process or function Industrial safety ,safety precautions while working different

10/27/2024, 12:52 PM

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hand tools . Approved : screw drives wrenches ,hammers files chisel,saw tap -engi seeing material yes = metallic material yes or no. Metallic yes , Metal yes ,feroos or non ferouse , steel plain carbon ,allot , Cast ion grey while react metalloid ductile, - non ferrous , aluminium copperwood papperleather ,mineral cement class graphic, - -iron ore heanotite Fe304 colore red ,iron 70%, -magneite (Fe203, colore blanc 72% -lemo ite ,colore brown. 62% siderite ,brow,48% _____ _-explanation market forms of steel structure shapes : laball _free cutting ,c=0,13max,MN=0,7-0,12,,S=0.16 -steel quality ,carbon tools steel Anees ,plain carbons , - Properties: application % tensile strength kg/mm.sq -Typical blast furnace: -Blow yes ,yes stove yes ,blast furnace yes ,slag ,oxygen yes ,mixer , .-basic oxygen produce yes carbon yes Stell ,bessirer convert bessure ,, Basic open heart basic operation , acide open heart ,, electric furnace yes acid , pudding process wraug iron , acide crucible ,steel ,iron ,mealable ,steel , , _____ Tools Plastic plaster ,5wax - factor effecting selection of pattern material,-number of casting to produce metal pattern are prefu required large in number ,type of mould process methods ,of molding hand or machine ,6 degree of dimensions accuracy surface finishing requirements minimum thickness requirements shapes complexity piece cost of pattern chances repeat order . -types ofpatter : -properties of moulding sand refactoring permeable cohesive green ,found sound casting test moisture content test clay chemical composition of sonde ground shape and surface texture of sound grand size distribution sans specific water absorption capacity permeability shatter index ---_____ Explanation: welding process ozyfuel gaz ,air acetylene welding oxyacet, oxyaceten ,oxy - hydrogen welding pressure ,-arc welding process car on arc welding ,sheelded metal arc ,welding , submerged arc welding ,gas tungsten arc welding , resistance welding ,solids state ,welding process theemique radiant energy welding -explanation: claim low machine used in sheet metal shearing machine,bending machine, grooving machines peini g machine ,beading machine ,swaging , machine ,blurring machine,double seaming machine. -types of press -method of operations an born press .methods of power source Manuel press mechanical power hydraulic press , -fitting : explain introduction device equipment tools marking tools , measure device measure instruments, supporting tools holding tools striking tools , cutting tools ,tightening tools .. -explain : inspection and quality control: checking components or product with requirements specification ,tolere Ce on port , interchangeable dimensions. Size numerical value lengthimjte size : .-uppee deviations algebraic difference between the two maximum limited of any size ,low deviations,mean fundamental deviations ,tolerance -fits allowance fit difference hole size and shaft size allowance. Fits yes clearence fit yes sliding fit yes or running fit yes ,,, Interference fit yes or forcefit yes or strink yes press fit .. -control chart : used quality industrial yes maintenance yes continuous yes evaluation yes , manufacture yes, -statistical control yes ,device cast yes , -surface finish yes ,routines primary yes ,waviness profile ,lay,flow ----- _____ 4.1requirement installation electrical guide ,, scheneider electric-explanation : characteristics of particular source and load . - photovoltaic installation , -residential premise and other special location . -WMC guidelines measure. -General rules of electrical installation statutory regulation ,0V to 1000V ,AC ,,0V to 1500, ln public network , compliance with national regulation ,IEC 603643, -installes power load : characteristics values of cos . I=IA.cos$/cos$.. power factor before compensation and cos alpha factor after compensation being the original. - heating factor of 0,8 recommender number consumer ,5

story's apartment building with 25 consumer ,each having 6 kva installed . - the total installed load the building is 36+24+30+36+24=150kva, -thw apparent power supply required for building ,150×0,46=69Kv, - magnitude of current in different sections of the main feeder supplying vertical rising ground ,level cross section area conventionally spece , 3 floor current entering the rising main at ground level , -159×0,46×1000÷400×√3=100A - (36+24)×0,63×1000÷400×√3=55A. -Possibivilty of improving power factor ,extension to the installation installation constraint. -In=Pa×1000÷U×√3, Pa=KVa ,rating the transformer. I=phase - to phase voltage at no load in volts (237V or 410V) in ampers , In =Pa×1000÷V=, V= voltage between LV terminal, Simplified equation for 400v(3phaae load ,) In = kva×1,4 (IEC 60000 power , -explain choice and use MV equipment ,MV / Lv transfo for use of MV , equipment choice of MV /LV ventit in MV substation, - substation including generator and parallel operator of transformer. Generator alone operation not working in parallel with the supply network. Generator in parallel utility supply parallel operation of transformer , - type and constitution MV/diatrt,-differenr type of substation,indoor substation ,outdoor substation. I'd=Uo÷ZS,,0,8.Uo÷ZC.. I'd=fault current , Uo=nomminal phase . ZS=earth fault current , ZC=fault . _____. 5.Scotland qualifications Explanation -basic software engineering concept to solving electrical and electronics engineering problem. -writing and testing and documenting I/O. - Program using the basic structure -deaign using flow charts or program design language. -Write test and documents linear programming using I/O statement. - Write test and documents I/O Programmation incorporating subroutines . -table Boolean expression for logic gate knowledge skil . -hexadecimal number system. -conversion , between hexadecimal and binary gate symbols. -teith table associated Boolean,and /or/not ,exor/and and nor . -combibation logic , expression in sum of products.produxt minimise logic ,draw minimised digital, -sequencw logic . -bloc diagram of sequential machine need for memory in sequential machine need memory in sequential logic latch ,JJ and D bistable elements. -asynchronous and synchronisation operation counter and shift register circuit using bistable . -lofic family device characteristics. Circuit . Build and test counter and shift register circuit - evidence requirements should -single line schematic for 33/11kv substation, -liar standard fault level for local Sister voltage (250MVA at 11KV ,100MVA at 33 KV, -pee unit calcul : concept of infinite busbar by grid system working with ,3phaae short circuit by grid system working with 3 phase short circuit worst case scenario calculate fault level for a fault on an ,11kv feeder fault level , fault 11kv feeder from a busbar it is expected that the circuit used will smillar to infinite system feeding 33 KV line with inductive reactance and transform per line excepted one generator should be connected to the ,11kv ,, .S1=250MVA,,U1=11kv,,Z=√R.R.+z(w).. V÷I=11÷39,3=0,279,,ohm ,,, =100÷5,24=19,083 ohm .. S,=V.I.√3.. I2=250÷11×3=22,72KA,,,,39,3KA I1=100÷33×√3=3,039==5,24KA.. -explain next generation higher national electrical engineering : utilisation electrical power transmission lines and complex waves, -Porformence calculation to determine each Zo ,V ,B .. - Voltage current and power for one fill ZL>Zo,,,ZL> -ID conditions then action ifco dition gold's . -ID conditions then action if condition holds -else Action if condition does hold. -End if Case condition of Case 1:action for case 1 Case 2:action 3 for case2 Case n : action for case 2 n End case Condition based input portion use of build process such - write . - test condition documents I/O prog using iterative loop statement. -repetition For variable ,from start to finish in steps of value . Do. -sections to be repeatlt perform End for . -fundamental of control system and transducer . -high level Engineering software. -soffward engineering process

creating file editing files process constant and variable. -operatoe and -statement :input output documents. - evidence requirements , satisfactory write one linear prog. - input and output statement different type of variables arithmetic operator . - knowledge skill test and documents. Relation operator =,|=>logical operators -vooleen express. -branxh statement ,if then if ,. Then,,else,,case,,of,,port configuration readings. -outcome 3 : Flowchart pseudo code : for ,do,repeat, until,while,loop. -statement:for do repeat , until while . -looo to manipulable data array -out put array , data array read port data into . -testing of iterative loops ,test plan and actual . - if then ,else If of either while do or repeat until for next to - Advanced unit specifications: engineering mathematics 1, qualifications Scotland,level6 -outcome outcome provide evidence following skills skill time . -solved 2 problem on degree radian . -A.sin(nx+-a)=, or ACOs (nx+a)=b -blow , logarithmic -log+logy=logx.y ---logx-logy=logx÷y p.logx =logxP. y=A×lnx y=A×log x..base10 Convert rad =Teta ÷180×π - A×sin(nx+a)=+-B - A ×cos (nx+alpha=+-B -y=a.expx - explain ,,x =log .base a inverrse function .y =a.exp x y=10 .exp x y=e.exo x ,,x = log . y=e.expx and ..x.exo =log..e y - solve exponential (5 .exp , = 95 ,,,x exo 3.5 =0,1.. log .base 10 (x+2)+log .base (x+4)=0,5 .. -Apply mathematics technique to vector and complex numbers ,2 d d=√(x2-x1)(x2-x1)+(y2-y1)(y2-y1) -D:,,d=√(x2-x1)(x2-x1)(x2-x1)+(y2-y1)(y2-y2)(y1-y2)+(z1-z1) - scalar ,,ab = b.a ,,,a(b+c)=a.b+AC -b.b-4a.c< - cos(x+B) Sin.a ×sina+cos.cos alpha =1 -sin2a=2sin alpha.xos alpha-cos 2 alpha = cos .cos alpha -sin - driver , differential , hyperbolic a.x exo (ax+b).exo n ,,,ln (ax+b),,,e..expon (ax+b) -sin (180 degree +Teta) = sin .Teta Sin Teta + cos = 1 , sin 2 a alpha 1-2 sin .sin a ,,,cos 2 a ,alpha = cos .cos a - sin 2.alph -_____ Hyperbolic identify e.exox = cos hx + sin .h.z e. - x = cos h x - sin h x Cos h.x 2x-sin x =1.. - sin h (x+-y) = sin hx .cos by +- coshx sin y -cish (x+-y)=cosh.z coshy+- sin h x sin h.y -sin 2x = 2sin h.x .cos hx -cish 2x = cosh.x+ sin h .sinh x. _____ Integral .u (dv/dx).dx=uv-.. integral.v(du/dx).dx Equation: Integral .x.x.e.e. dx Integral 3 limited ,x dx .. Integral ..b..a √1+(Dy)(Dy)÷dx()...dx _____ Introducing ,j in term ...j.j =-1,,j=√-1 Introduction Euler relation e..exo j Teta = cos .Teta+j.sin Teta ..and Z=r(cos.teta -jsin.teta) r .e.-j.teta For ,-10,(-2+j5),(1-j)(1+3j)..that Z1 ,Z1=6,e .j π/6,,and z2=9e..-jπ/3.. -Det,Z1.Z2..and Z1/Z2.. -introduced moivre theorem (cos .Teta +j sin Teta) .n = cos Teta..Z.exo = r .. -solved involve express (√2+j)5.... -solved ,Z..... ---_____ - diffentiatiin technic to solve engineering problem. a.x .exo ,(ax+b).exo..n -dy/dx=Dy/du,xdu/dx - apply chain module to function.. (3.x.exp4+7).exo,,sin(t.t.t+1),,5 _____ Use differentiation technique to solve . y(x)=u(x).v(x)...state product quotation.. Dy/dx=V×du/dx+u.dv/dx..or y'=v.u'+uv' y(x)=u.(x)÷v(x)-dy÷dx=v×du/dx-u×dv/dx÷v.v.. -Vu'-uv'/v.c - solved ..x.x,,sin (4x+9).e.-3x,, t.t-1/t.t+1,,.. Solve differential x.x+3(y)(y)+4x-5y=, linear factor quadrature improper. .-solved infinite integration .. Integration. (5x+2).exp6 dx,, Integral (x)√1-x.z..dx.. -solved second order constant linear differential. a×d.d.y/d.x.x+Dy/dx+cy=f(x).. Use partial differential f(x,y)...z=f(x,y) , explain that double integration involve integration,f(x,y) Integration.integration .r..f(x,y)dy.dx.. Region integration x-y,, -solved differential equations Laplace transform introduction la place transfo ,f(t) F(s)=integration ,e St ..f(t)DT.. ,,ergent value vector solve linear , |[A-lambda],, matrices ,,,x of eq Ax =lambda x.. -problem manipulation of matrices ,sq, identified transpose argument.. - solve problem use of Serie representative Taylor Serie . f(x)=f(xo)+(x-xo)f'(xo)+(x-xo)exp2,f'(xo)/2+(x-xo)exp n,f(n).(Xo)/n| introduce mac Laurence . f(x)=f(0)+xf'(0)+x.x.f''(0)/2|+...(x.n.f(n).0/n.. ,eg ..e.x ln (1+x),,,e.x tanx.. Deviations a linear approximation,polynoy.. -solved first differential equations.. Dy/dx=f(x)g(y).. -y=Vx,,or y=ax+by+c Dy/dx+P!x).y=q(x).. -voltage flow A 1=RF/R1,,Av2=RF/R2,,AVN = Rd.. Vo=(Av1.V1)+(Av2.v2)+...

Vo=RF(V1/R1+V2/R2+.... Amplifier AV=Vo/(V2-V1),,AV=RF/R1,,Vo=RF/RI(V2-V1) --id V1...I.. _____ 6.Engineering science. Structure : Stress =£=F/A,,,,strain €=ΔL/L Young module ,E=¢/€,, Factor of safety = ultimate load / safety working load.. ----------: Pneumatic: pressure force area ,P=F/A,,area circle ,A=π.r.r ,,,A=π.d.d/4,,=. π=3,14,, -mecanisme : Velocity rotation, VR=spped of input /speed of output,, Torque ,T=F.r Circular of circle ,C=π.d Moment of force ,M=f×l Prince moment ,sum =0,, condition.. -7. explanation engineering science Explanation: :variable temperature soldering iron is shown the soldering iron use a two state control system to turn heating element on and off,and to monitor it output to maintain the desired temperature. - completed the control diagram for the soldering. -desited temperature>>>, control unite ,>>, temperature sensor,>>>soldering iron temperature, -viewi g platform.. -explanation: A beam used in the construction of the viewing platform. Calculate the magnitude of the reaction at B , calculate magnitude and direction of the reaction, - calculate the magnitude of reaction at B ,, Labalked , (24000×1.10m)-(3500×0,30) (F1×L)+(F2×L2)= 264000+10500=35000×L 265050÷35000=75,70m/n ---------- 8.Explanation: A lifting system to allow worker on construction to carry out essential maintenance is being . A warning system that will ,sound an alarm when the platform in motion is two button used to control the upward and downward motion .. -input /output. | Operation-alarm sound | A=0 -Maximum load. | B=1 -bouton c Pressed, Bouton depressed| C=1,,,D=1.. .-propose design has the following specifications condition must be met the alarm z ,will not sound unless the gate (A) is closed will not sound when weight on platform will sound when either button ,c or complete the Boolean equation for the alarm .. ---------- Explanation: calculate a suitable value for RF: Vi=RF/R1(V2-V1),,, Vin =(Vin+Vin+Vin, O,31+0,53+0,47=1,32 RT=1/33000+1/3099+1/30000=o,ooooo90960 RF=,,RF=Vo×R1/V2-V1=, 1,2×0,09999096/1,32=0,0099910 ---------- Explanation mechanical engineering must design a pneumatic circuit meet the flow,when push button VA and VB not pressed ,or when. Not pressed lever ,VC state double acting cycling must, outstrok {A`.B.`+C -a short time after cylinder outstrok must instroke automatically an initial design the circuit...---------- The program to control the cylinder must follow criteria oustroke =A`.B`+C the cylinder must remain oustroke 15000 milrsecond ,209 milrsecond after the command to instroke the system start monitoring. ---------- Explanation -An alternative motor with moseft driver in also consider the mosef has a resistance of 2,3ohm fully Saturated and the motor is rated as 0,49 w at 6.0 I=0,40÷6,0=0,07 I=V/R=6,9/2,6=2,60,, E=V-IR 6-0,182=5,818V ---------- As part of the car control window are to be open and automatically the following control produced ,by -explain with ref to the circuit above the impact switching out 7 high then output 6 high then output 6 high has on the motor---------- Program below in Pbasic ardwno code is know to have fault.. - main if pin 3=I then jump If pin 2=I then main If pin 1=0then man Jump:high 7 Pause 15000 High 6 Pause200 Low6 Goto jump -void loop (){if digital read (3)== high {jump();} else if (digital read 2, ==High){loop ();} else if (digital read (1)==Low){ loop();} Void jump (){ Digital write (7,H,G, Delay (15000) Digital write (6,high delay (2000); digital write} - ---------- The camera is placed on the outside car and a talk of clear plastic is place ... ---------- Ligth sensor is used to identify when the plastic is dirty when it sense a value of less than 219 lux a motor spins to move clean plastic In front of the camera the control , - calculate the value of aR1 required to saturated the op - Amp

positive 219 lux , R1=Rcc-R ,,,Vo=(1+RF/R1).v -motir requirements ,55mA of current ti operate the op - amp saturated to 78% of the supply voltage vbe is ,0,70V saturated transistor RF =,,,explan 9,0055A÷0,70÷0,000795÷6÷9,, R1=Rf÷vo÷v2-v1, = 0,01119... ---------- Truck ligth system ,completed logic A,B,C,D,E,F, ----------+ Batteries power portable flood light are to be installed the construction site to allow work to be completed in lower ligth ,the battery is rated at 15V,13A,kB hour useful energy is 2,32 MJ Completed the energy audit diagram for the portable floodlight batteries slowing the input and output energy .. ---------- The diagram below show part of the design for the framework that supports the floodlight. .-calculating using nodal analysis at node A,and B the natural force in ,AB,AE,BD,and BC Member | magnitude. | Natural AB. |. |tie AE. |. | Strut BD. | BC . explanation= L=355×cos 30=321,73nm AE=455×sin39=227,5Nm BE=455×cos 30=227,5 DA=(455×30 sin ×30 sin)+(350,sin 39 =321,73+227,=549,29 ---------- The force w represent the weight exhibition and is acting ,1,4 m from point B ,the distance from A to B is 3,46m Draw a free body diagram of the force acting on the exhibition calculate the force , 650×sin 120° 776×sub 120°-force acting on the connecting ring Q=(530×cos65°)=223,97 P=650×cos 37°=447,2 T=776×cos48=539,054 F1+f2+f3= ---------- d) replacement exhibition is to suspend from ceiling some positions two cable support the new exhibit hanging from the connecting ring are replaced Hallow aluminium.. The 2.7 long tube has a diameter of 72 mm an walk thickness ,,2,5 mm it support a load of 32,7 N calcul the charge in length tube it is load new exhibith . A= π.d.d÷4= 3,14×72÷4... €°2,6-2,5÷2,7=1,92.. £=F/A=32,7÷56,62=0,62.. ---------- Engineering civil

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compact , calcul the total torque produce by motor , - described an advantage : described the purpose of. -funal design structure used to support the weight the boring . Completed using nodal analyse table of the missing force their nature of the missing force their nature . Member .| AB | AC| BC| BD| CD Force |. |. | 583kn|566kn| Nature | tie | strut | strut | AB=(550×61)+(550×61(---------++------ Calcul the force that player strikes the ball product a torque of 295 NM (0,34×295)+(0,84×295) Force extension graph ropes Calcul the strain energy in the rope when it experience tensile tension 159 .. ----------__----_ An electronic engineering design digital logic circuit for Boolean equation , Z=(A`.B`)+(C.D) - draw the digital circuit for the .. Design for an operation amplitude op circuit is Calcul gain for circuit when V input voltage is ,9,11V ,,ΔV=7,59÷0,11=69.. Determine appropriate resistor value for E 1,and RF : AV - R1/E1=59-1/R.. Integrator §vout =1/RC.integrator .Vin St ... f=1/2πRc.. 555,timer stable .. Marj = T1=0,7(R1+R2) T2=9,7 R2.c Freq° 1.44/R1+2R2c.. ---------- Calculate t output voltage of the difference amplifier amplifier when the ligth ,calculate the minimum output voltage requirements from Amol to cause three , d) described effect adjusting variable resistor will have light level .. - the LEDs ,are at their most offence when current of 52 mA ,flow each they also found 2,3 y occurrence , Calculate the required resistance for protection resistor ensure maximum efficiency ,VCC for the comparator is set to 8.0 v the comparator saturate at 75% .I'd = 52 mA ,,vs = 23v ,,, ID,= 9,0952÷8=0,93,, 23/0,04=575 ohm ---------- Future solution involving used of microcontroller is also tested an output pin on the microcontroller activate bank of LEDs .. From sensor input ,microcontrol yes ,,pin 6 ,, 1/R1-RD)+(1/R2+rd2)+(1/R3+Rd3)+(1/R4+Rd4.. ---------- Explain with ref ,to code circut the effect on the LEDs ,when the reading from the analogue sensor rises from,5 to 200 -------- The logic circuit show below control valve that provides water for the plants .. ---------- Explanation pneumatic circuit need to feed wast into incidence part of a system to produce electricity safety reasons ,be bar material is pushed in the system cylinder outstrokes allows . . càlcul the minimum base current in requirements to switch on the relay ,,,, In =0,7/1,5=0,4667A.. .- calculate the voltage requirements across the resistor assuming vbe is ,07 v ,,calculate the current through the variable resistor , V=6.0.1,5/2,5 ---------- - by using pulse width modulation the LEDs can be mode appear bright or dim Code for the test is below in Pbasic and ardruuno Main: into sensor =A9 redax Pino,Bo. Int led bank =7 If Bo<50 then level 1. Void set up (){ If Bo<100 then level pin mode led bank output If Bo 49 value 99 et value design concepts --->computer>>>display.. Use , existing design,use existing formula,modify , generator - Vmean at 0°=√2/2π×VRM×(1+cos alpha) √2/2π×240(1+cos 1)=108,038v Meant at 90°=√2/2π×VRM×(1+cos alpha) =√2/2π+240(1+cos90)=54,019v -Vmax=√2×Vrm =√2×240=339,411V IRMs=√2/2×irmax = 10,60.. ---------- P2=√P1.P2 =√104x×800 V1=Vr1/N=0,4×60/550=0,0436mm. m=P1.P2= 104×0,04364=0,05416kg V2=m.R.T2=0,05416×0,287×292=0,01574m P2,288,44 Vs =v2=π(D2)/4.D=0,01574=π(D2)./4 P=2.n/n-1.P1.V1.[(P2/P1).exp .n-1/n -1] =95,69kw - prerequisite= pact /n = 95,69/0,88=108,74kw -at ,44,8°c ,,h1=188kj/kg at 93,5°c, H2=392kj/kg At 1500kpa , 350 °,, H4=3148kh /kg .. h plant = ms (h4-h1)/mf×hv. ×100/1 =5400(3148-188)/600×3200×100/1=83,25% EE=ms (h4-h1)/mf×2257 =5400(3148-188)/600×2257=11,803kg,steam /kg fuel Qecon = ms (h2-h1)/mf 5400(392-188)/600=1836kj/kg At,1500 kpa ,hf = 846kj/kg and ,hfg = 1946kj/kg = 2595,5kj/kg Q,super = ms (h4-h3)/mf 5400(3148-2595,5)/600=4972,5kg/ Q,flag=m×.cp.×Δt (15+1)x,1,045(210-24)=3109,92kj/KJ _____ Qin (KJ/kg) |. out KJ /kg |. %----------

---------- Qfuel=. | Qecon=1836. |5,74 32000. |Q Eva=19831,55. |61,97 |Super. = 4972,5. | 15,54 |Qflugas. =3109,9| 9,72 | Unaccount= 255 |7,03---------- ---------- 320. | 3200. |100 ----------
~=C.p/CV=1/0,712=1,4 T2=T1(V1/V2). exp ,alpha -1 = 28(13/1) ,exp ,1,4-1 = 806,26k T2=P1(V1/V2)=10,325(13/1),exp = 3674,83kpa. T3=T2.P3/P2=806,26×5000/3674,83=1097k. Q2-3=2/3.QT Q3-4=1/3QT. (2/3).m.c.v(T3-T2)=(1/3).m.c.p(t4-t3) 3×0,712(1097-806,26)=1(t4-1097) T4=1511,01 V4=T4.V3/T1=1,3774m T5=T4(V4/V5).alpha -1 ASR=1-Ts-T1/(T3-T2)+aplh(T4-T3)×100%=62,47% - explanation cpd, continue professional development , Scotland outcom qualifications,UK qualifications: -13. research on papper libry text book Bibliotech: Reference:resource -uk magazine for electronics technology and computer projects . EPE , everyday pratical electronics Order book ,8$,,10$,,3euro ,200rans -Projects and circuit,series features, regular and services -Topics : Scotland magazine second voice recorded module: record two ,four eigth different message clean and clutch free line level audio output can feed an amplifier or PA system ,8 bit recording quality user selected bandwidth.. - Scotland:Applied skill engineering electric , Engineering electronic engineering science , mathematics engineering - Topics : scottland outcom PIR - triggered mains switch ,use a domestic pie system to switch any mains -power device ratesup to 10A..-topics : multti function , intelligent remote , controlles dinner the ultimate dimmer project using a standard handheldsr remote .. -topics teach in 2011 part :logic circuits - our to be missed introduction to gates and flip flops.. Microchips microsti k development board.. -10.constructional project: Design concepts: Hk828 module record 40,60 - getting the messat : module jump random sequence. - how it works: function heart module architecture -labelle the block diagram of the hk828 voice recorder chip while the recording process relies on audio sampling the audio is not stored digital but used and analoguw sample and hold system the analogue sample stored sample .. -samplung rate : capacity array means that HK store total ,8000samplw per second total ,262,144/8000,,42000 sample ,4200 total ,262,@44/42000, recording bandwidth fidelity propertionaj sample ,2khz , samples ,just 4khz.. -circuit details , 4,7 if ,,and 220kohn ,19pin preamp and AGC,, circuit vis couple 29,,5,8hz,,47kohn , switch logic signaj teeminaj . -parts list multi message voice : 1,PC board code 797 available Epe pcb service 110mm×57mm. 1).electre microphone insert . 3) ,3 way terminal blocks PC mounting 1), 2way terminal block PC mounting 3), 2 2- pin section of Sik header strip. 3 jumper shunt 1 ,)28-pin Dik ,ic socket :15,24mm spacing. 1)8-pin Dik ic socket ,7,62mm spacing 1)2.5mm concentric DC power plug ,PC mounty socket ,PC mounting _semiconductors :.1 HK828 voice recorder IC (ic1) 1)LM358 dual op amps (IC2) 1)78L05. +5regulator ,reg1 1) PN2099,PnP transistor Q1. 1) 5mm green led (led1) 1)5mm res Les (led2) 1)1 N4004,1A diode ,D1 -capacitors : 1) 2200uf , 16V, radial wlectr. 1)220uf, 16V radial elect 1)22uf,16 v radial electric 1)10uf,16v 1)4,7 if tag tantalum 1)220nf ,100v MKT metallised polyester. 1)100 nf ,multiyar ,monolithic ceramic , -resistor : 0,24w,1% 1) 470,kohm, 2)100,kohm 9)22k ohm 1)100 k ohm .. 1) 220k ohm 8) 47 k ohm 2) ,10 John 2) 680.ohm 1) 47 ,ohm ---------- 12) constructional project : IR remote control ligth dimmer module,the circuit is based on a PIC 18 F ,1329-U/SI microcontroller ,a triac and and IE detector (IRD1)the two RGB ,LED. give user feedback in the operation and setting. -power supply: micro synchronisation waveform connecting neutaj ,,derived from the mains via a 1kohm ,5w , resistor and a 470 nf (X2) capacitor and resistor act as current limiting impedance for association ,5,6v zener diode ZD1,the supply works as follows,for positive half cycle of the 230v,AC current flow via zD@,the ,470nf ,, capacitor Nd

1k.ohm ,5w resistor same time , electrolyte capacitor capacitor is charged ,up then for negative half cycle of the mains current flow ,via D1,the 479nf capacitor and the 1 k.ohm resistor ,the results is that the 470,if capacitor is charge to ,5,6v-0,6=5V..DC Impedance of 470 nf ,series 1 kohm ,,micro,,5v supllie,up 23ma ,IRD1,, supply bcircuit two RGB LED are connected six cathode connected to a different I/O pin the common anode two RGB LED connected together 5v,single 1 kohm .. IR remote are amplified filter decoder received module IRD1,,the 1000 ohm ,resistor capacitor are module to decoupled it 5v supplies the data output at pin 1 of IRD#,is connected to pin 10 of ic# and configured.. -construction : intelligent dimmer is built on a single &sider PC board code ,799, measure 76mm×50mm .. _____ Part list intelligence dimer , 1.PC board code 799,acat from Epe service ,size 76mm×50mm 1. Ip65 sealed ABS plast case Witt clear lid ,size ,,125mm×85mm×55mm(jaycar HB-6246) 1.flush mount ,3 pin main socket ,jaycar ,PS 4094 similar .1. IEC make chassis connect with mounting holes jaycar ,PP-4005 1.)10 MHz crystt(x1) 1)47uf, 5a inductor (jatcar lf-1274 1)4-way Dinklage screw terminals plug ,jaycar ,HM-3124 1(10A,ISC main cord -semiconductors : 1 .pic 1 1.ie receiver 1. -capacitors: 1470 ,16v electrolyte -resistor ,: o,25w - miscellaneous: 3M3×25mm nylon screws (to secure PC board. 2M3×15mm,nylon screw ,for IEC connector 3 M3 x12 mm nylon space , 10 M3,nuts -1)1 ok mm of ,0,7 mm dia times copper wire for links ,, 1)200 length ,3-core mains flex (250v,,10A ratt, 1) 4,8 mm res spade conductor,fully insulated , 14,7m yellow spade connector duly ,5)100 cables tie Add,part requirements testing 1)12 AC ,500mA,or 1A plugpacj, 1)12v,,300mA,ligth bulb (jaycard ,SL 2656) -construction project:PIR -triggered main switch: Futer detector ,20m away ,two pair telephone cable , switch unit also provide 12v power PIR detector cable switch main rates relay to switch the power twin 239 AC ,outlet ,relay contact rated 20A, switch. , 10A limited,10 different ,, switch power load any time regardless ,switch units fits ,UB2,size plastt box ,, switch itself battery operated and switch low device if about ,80mA,12v .. :how it wot:block regulated 12 volte power , internal circuit plus unregulated,17C ,DC power virtual contact ,which are normal close ,open when detector Sens movemt. Contact unit also connected ,12 line detector contact open R1,and it's output switch low ,this action issued set reset ,flip -floo ,normalt resting .. Switches intu set state Q high used a transistor driver circuit energy relay ,power switch 239 AC outlet and loads, at same ,sR flip flop switch to A Output multi stage remove reset counting pulse from simple clock oscillator ,which run 0,9374 the reason odd frequently clear , the binary counter has 14 stage but make only from internal flip flop 4 to 10 (04-19)and 12 to 14 (012-014) we rotary switch S2 to select one 10 output ,si rotor of S2 kept until the selected counter output switch This happens a soon counter has received the appropriate number of clock pulses,eigth in case 04,16for O5for32,for0664,for 07 switch high after 8192 pulse been counter ,selected counter switch low situation coupled via capacity c1, resistor R# inverses I..-main connector ,three connector ,iex green wire , yellow main wire ,T1 longer ,same wire 160mm , outlet socket .. - insulating shield ,two outlet socket insulation material pvx , -final assembly: step the two plug into socket make noctch , completed box ,, -Pir : testing or adjust.. In used .. -parts list trigger main switch, PC board code available service size 147mm×69mm 1)ub2-size plastt box ,197mm×113mm×63mm 1)PIR sensor 2)heatsink ,19mm,square t o-220 type , 1pushbutton switch spst (S1) 1 rotary switch,1-pole ,12 position (S2) Point knob with removable pointer insert . ,1)6- pin Rj12 socket ,PC board MTG (con1)or ,3way PC board mounting termi block 1) 14- pin Dik ic socket ,for I 1 16 pin Dik ic socket for , 1) power transformer ,12,6v/2va,2851 type 1)29A mains rated relay ,chassis MTG (RLy1)

1)IEC main plug , panel mounting 2(mains sicker flush mounted 4 main socket ,flusg ,15 mm long ,M3 tapped,. nylon M3 machine screw ,10mm long csk head ,N3 machine ,6mn,long pan ,solder lug ,,nylon cable tie 100m ,25 mm length ,6 mm diamt heatsgrink tubing , - semiconductors: quad scmit band ic1,4093B,,4069 binaicounyer,12 regulatory,PnP transit,led green silicon ,, - capacitor, : resist -capacityi -explanation: Project a plethora of , together with the pic programming , -PIC training course. , training development course enhanced ,pic programme module,-bool expirmenting . Experimenting with PIC microcontroller,this book introduces pic programming , jumping straight in with four easy knowledge 8 binary. Explanation logic - digital logic , circuit basic building digital circuit and system . -possible , switch and lamp logic , -lofic gate with inverted output ,, Y=A+B Y=A.B Inverter ,,y=/X.. And gate ,,or gate ,,and gate ,,nor gate. ,exclusive ,incluve gate.-Bistables ..D type bistable , D-typpe bistable,,j-k bistable .. -pratical logic circuit.. -build the circuit wizard way : opening to gates , gate number Intruder alarm: real life application of simple logic intruder alarm push to break , advance... - ripple counter.. -investigate : a block schematic diagram logic syst ,the system is designed to alert the flight crew visible and audio warning ,door switch logic signal respective door logic 0,when closed warning indicator active low requirements logic 0,to produce a visible audio ,study the circuit carefully and then see if you .. 1.what logic level appears at point of door closed ,wath logic level appears x,y,z ,,wath level appears point x,y nose door open other closed .. - circuit surgery : collector feedback theory /bias ,, A=So/Sai,, feed factor,,loop gain ,,Sf°BSo Sai=Sin-beta So -So+beta So=ASin .. AcL=So/Sin=A/(1+beta+A 14. Files system. Record academic and certificate diploma, 1.Pocket number. Implementation work Data right,met investigation: Project : drawing : Career project : theory circuit Schematic Experimental : workshop workplace school class pratical career guidance National trade examination :theoretical and practical ,n diploma 18month Memo tech , Project drawing: interpretation -Mathematics graphic draw :project Line point -Electrical trade theory draw labell: Circuit component make: Resistor cell,baterrie ,AC DC circuit current,lighting washing machine , transmission generation AC inspection -insustrial electronics draw labell Circuit component make: -engineering science Graphic and circuit .. - grade total career ,staff theory learn Pratical exam test trade assessment Engineering electrical. -fault find diagram schematical . Relay -installes rules ,circuit diagram, - lofic system -control system : -15 .experimental,.projects pratical trade framework qualifications marks : certificate diploma 6 month semmester trade.. Trade theory -pratice frame work Component frame ,electrical and electronics Drawing : make circuit tools process make circuit framework Trade pratical engineering:level5,6,7 Process Design Designation unity| ,component| ,tool trade| -male tool pincil draw Make, resistor ,condensator charger circuit tools make drawing . -makee installation lighting way switch : -makee transmission ,generation ,drawing ..design. 3.experimental :project drawing City power Eskom advanced career Drawing workshop and workplace , Library on line project On line. Power engineering,advanced Scheneider,Eaton breaker design -drawing diagrams city : Metering circuit: design Installation city transmission generat drawing schematic: Installation: -drawing interpretation: discovery electronics Drawing make: installation security alarm ,police alarm design intelligence robot circuit timer 555.. Computer electr -4. implementation integration system . Guidelines guidence pratical school Microsoft project azure ..GitHub ,visual studio gith lab Work item : epic item project repository project issue project run project code source readme licence,IP drawing circuit 15.1 Trademarks T Blaser tableaux Met career police tpm ,

counter terrism , Engineering systems:met block mark TMP circuit maintenance meeting break Data right .. Cell phone: IP licence book rwiten integration : met career detective ,counter flip flop ,electronics ,CCTV circuit right , cameras phographic right lens zoom circuit , repaired center cellphone city vs transmission Telecomm office vs Microsoft office vs circuit power vs installation electrique compagny police data certificate copy license copy private police ,,policy city power Eskom policy claim drawing design power cost economic load ,outage circuit . Total ,pratical , policy claim vs claim alarm maintenance total career , Security safety claim nated counter terro record irregularity phase circuit complain circuit implementation: -total framework policy vs police record LDR framew not meeting vs Terri counter irregularity vs Total grand :grand council department energy Eskom policy ,city power policy terro counter emet. Irregularity mining company trade mark , telecommunication claim vs customer trade marks compone maint Tom . -total grand met tblazer Salesforce energy claud metering energy co circuit incidence force sale policy -data right energy metery claim. Vs alarm relay delay dimer switch. Microsoft project azure blue defender Regulatory factor ,limited Freq , energy cost. Bill cost energy Intergration circuit switch. Record total Physical meeting .. script inspection 16..Experience pratical: www elektor .con, Test book Order booking :200rand ,,4eu - microcontrol analogue audio , digital,test measurement. -Pratical: quick to implement reusable multi plat form , fts. -sub long term weather logger . - ATM,18 compass. -j2B universal MMI module using ,arms cortex .. -FT232 ,USB Serie bridges/BOB Chip kit first Arduino compatible ,23 bit microller development platform,design manufacture. -Parallax : li - ion power pack charger -reflow mate : Supply voltage: 230V/50HZ only Power : 3500w Weight: approx ,29kg Dimensions: 620×245×520mm (w×H×D) Heating method: combined IR radiation and hot air .

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Operation: directly using menu buttons and LCD remotely using PC software and USB connection. -menu language : -temlerature range ;25 to 300°C - Maximum PCB size :400×285mm - temperature sensor : 2 internal , Optimal temperature distribution thank to IR lamps - Drawer opens automatically et end of soldering , - Glass open automatically at end soldering process - interactive commander for data transfer Command | action h =help. | Print available command _____ -Current drawn by entire system at ,3,3 V CPU frequency| sleep mode | current drawn 8Mhz. |Non. | 5.8mA _____ Fuse settings ATmega 88 Fuse | Ext| OxF9| 8MHZ intern oscill (divided hence cpu clock is 1Mhz-
$_____ -weathet logger operates supply voltage of nomminal 3,3v power over USB ,is available 17 ,VCC of BOB ,FT232R serial -to-usb converter module for stand alone operation unit power via BT ,, supply voltage between ,3,5v and 30,V regulator ic3 diode detector again accidental reverse polarity connection important employees reduced measure to maximise battery life in stand ,alone operation microcontrol is responsible cincentre measure effort circuit ,3,3 V under various conditions is shown , alkalt or NIMH ,AA cell , 4,5 v or 3,6 v nominal capacity of between ,2Ah and 3Ah ..record data for least 1000hours instead of three AA cell free the employee single ,Li - ion Lipo cell supplies ,3,6 or 3,7 ,, on power saving measure is to carry , 100second ,, measure system draws extra about ,2,5 mA ,,120 ms ,when taking reading in between ,10ms corresponding to the 1hz interrupt the device is from ,power save mode 59 second ,I/o clock micro controller order need to be count the pulse in order , CPU.. Result disping result Test measurement: HH10D humidity sensor module feature . Re Swegethttps://GitHub .com/milkmist)mist rewmaster tools / filter m. Bios serial received firmware download request from the device. Flyerm uploading Kerbal (83475 bytes Upload completed (9,5kb/s. Booting the device Done Hello - the pattern obtained after numerous iteration of the command pixel [I]=y*y* x>>5.. Testing in development board ,,use serial port to upload application ,,serve a console for displaying the message sent to print f +) the Boras fitted with a ,3,3 serial port ,located between the ethernet and VGA connector ,pin marked ,board received the data marke tx is used by the board for transmission the GND is obviously ground ,3V3 is a 3.3 V power rail serial long use 3.3 level (not 5v or RS -232) or the combined devdlop - organisation display of the measurements results .. -CMOS compass module: board .kmz 51 chip ,the resistance variation in resistance cause voltage variation which is amplified,LMC 6036 ,sensor electronics magnetic heading us calculated micontroller bus ,corrected module positions ,pin 7 ,AC power grid in him parameter story EEPROJ - orienteering ,4 load firmware power manufacture ,want to recover the module function bearing send following by modulating.. Wiring block - digital communications with the robot electronics cmps module Graphical representation of the compass point -circuit diagram the construction file eagle files component list software Keypad : consist 12switcges ,4 to the left of the display ,4 right , rotary encoder switch encode build push button three encoder space ,9 encoder build in button 27 button ,a5×6 Matrix need connect key I/o scane 4 key free way , function available some function make ,use diode avoided problem phantom key several press ,a situation turning the diodes package .. Different variations on the 2×@6 LCD ,key swiy offset .main function resistor R38,to R 44 board turned using button S1,s8,s12 key fitting , resistor provide. ,turn key circuit by battery function asymmetric matrix line have limiting resistor (15-R25) is final circuit .. - display: board offers possibility of fitting ,2 line by 16 character (2×16) display ,4 line by 29

(4×29) ,,by 16 character connection ,5v power ..R ,36 ,R 41 is necessary T relay ,R1 ,120package . -Powering : the board main rail (V+) is 5v microcontrol itself ,3.3 derive,3 ,, are directly connecting the display available on transistor (piooo,6,,Pio 2,8. Etc pad k1 and k2 ..signal - construction: - implementation : board - twitter message local area network LAN wireless configt.dialog - communication on the dso board. Detec signal the ratio signal generator DSP ,101dv,and this ,n level of ,94 db application peak to peak with sinuskidaj ,0,53 to 0,59 time supply average Test measurement: Component list Resistor :.R1=220kohm To R5 -capacitors : C1=4,7uf ,63 radial to C7=470nf. - semiconductor: D1,D2=BAT42, T1=BS170. IC1= Ic2=ATMEG,, Miscellaneous:.S1,S2,S3=6mm switch ,PCB mount S4= single -pole switch X1=32,768khz quartz crystal LCD 1=DOG @62w.. Mod 1=BoB .. Mod2= humidity sensor HH10D K1=6-pin(2×3) pibheader option iso interface -20-way socket strips SIL for LCD1 ,, 18 -way(2×9) socket for mod @.ic socket for Ic1(8-eay and ic2 (28 -eay ,PCB hi Settings and function button S1 to S3 Print circuit board. Humidy sensitive used transducer elements frequency 6khz to 7khz measured AT mega ,value with calibration par ameyer again stored series module frequently counting the output pulses module over second ,the 16 -bit counter timer , capacity 64 kbyte,,stored,record .. -soffward : firmware for the microcontroller is written in C complied using .. Program in weather station,LCD to control display .... - construction: double site circuit board diagrams components mounted in board ,socket solder components,fused iso connector ,k1, programmation job ,program used sensor module serial to USB module , switch ,S4 position to select external power ,3,3 - operationel ,: treer button (S1,S2,and S3:,S1 cycle variouse Setting ---- _____ C28=C26/(4Q.Q×(1+Ao)),. R24=2Q/2(wo×C26) R25=(1+So)×R24, R23=(2+So)×R24/So If ,A=0,7071 and So=,these formulas sin plify to , C28=C26/4 R24=1,4142/wo.c26) R23=R25=2×R25.... _____ Basemodu ---- Lab testing ..prototype audio convert implementation: Component list -Resistor= R1=330 ohm R2=680 ohm R3= 470 ohm Capacitor C1=100nf Inductor: tri ,home -semiconductors Led = standard led yellow - miscellaneous, cinch so let ,solder pins ,USB audio - circuit : circuitry design ,signal pin @, coupled resistor impedat former signal (0,5vand 75ohm) coupling transformer provide galvanized cover upper frequently transfo limited couplings toroidaj core material suitable signaj ,50Mhz .. Construction: PCB ---------- - - schemat diagram of the flasher - Circuit the time integration module Base e two operational amplifier ,A1 and A2 ,- ,non + input and output,varyyng voltage V1(t) is applied A2 driver integrato ,R c and A2 ,Rc stage ,add resist ---------- Light sensor : With twilight detect: sensiu circuit 9vdc. to .15 VDC..ligth room circuit generate ,lm257 ,R1 and R2,,voltage dived ,,R3 and R 1 circuit , Ooamp ic1 wired buffer voltage LDR suitable R2,voltage pin IC,,,IC1,,, ic2,0 other ,,22kohn R,10two comparators ,ic2and ic 2b compare income p1and p2,0thar output R 90,be ause ,, determine dark ,ic2. and I 2.. - explanation teach ,in A broad based introduction to electronics: digital to analogue and to digital conversion: electronics studies school college UK ,include byec level 2 award electronics diploma in engineering level 2 experienc - e read ,teach teach learn experience test electronics circuit Learn : - beam break flash trigger ,build necessary time delay photo flash response IE -Parts list active loop antenna : - @ PC board code 813 (ant loop) 31mm × 94,mm - @ PC board code 814 (rad loop) 58mm×48mm -@weatherproof plastic box ,eg 130×54×83mm plastics box -@8-pin IC socket - semiconductor: 1BA4560 dual op amp (IC@ 1 k8L08 or 78K10 voltage regulator. 2KDV ,149 varicao diode (D1,D2) -capacitors -3)100uf ,16v electrolyte 5,) 15 nf disc ceramic. -

Resistor (0,#5w, 5%) ..micelanot _____ Beam - break flash trigger.: the infrared beam is generated by led1 to led3 and picked up by phodetector diode ,PD2,,op amp ic@ b function as current ti voltage ,while I 1 is wired as non inverting amplifier the latter derives transistor A mosef briefly sait h trigger outbut when the or is interrut . -circuit details: Power isderiver battery in detector unit IRv beam from source unity OD ,3,5 mm jack plug con@ mate ,, detector unit IRv source unit ,IR pgotodetector diode ,is connector diode ground and the inventing input ,out site,,+1,7 v ,and +4,0v ,IR ligth is falling on OD@ dark , basically ,#2kohm ,,2,7kohn ,,220uf ,, Qrin writing amplifier ,, s -Switching the triggers output: Q1 switched when IR beam falls on PD1 collector voltage is normally,beam interrupted ,mosef .. - parts list : IR source unit : *1 PC board code 808 ,57×26mm 1)UBS size box ,8#mm×53mm×31mm 46mm long untapped spacer ,4 M3,×13mm screw ,counter sink head nylon cable tie ,75mm long 12m length ,8cable 23,5 mm ,monk jack plug cable type , - 35mm IR ,led (led @ to led 3 ,1)820 ohm -detctor unit : 1) PC board ,code ,size ,,122mm×58mm 2UB3- size box ,129mm,×68mm×44 mm 1)SPDT mini toggle switch ,s@ @)PC mounty ,,3,5 mm stereo jack,socket ,, - PC mount ,15 mm tapped spaced ,8 M3 ,6 mm machine screws pan head - 21 mm PC board terminal pin,, 19v ,,battery clip lead 1)8-pin Dik ,,IC socket .. 1)30mmm length of ,13 mm to ,,15 mm length of ,12 mm to ,15 mm diameter black pvx conduit or brass tubing .. -1 piece of ,IRv- transparent red film ,approx snap connector or , 1×4- way ,AA cell holder . 1×2 way ,AA cell holder - semiconductors: dual op amp (ic1) 1Bc33,nob transistor ,Q1,IR pgotodetector, - capacitor : - detector board final assembly n: construction v -cinverting scanners for ,VHF/UHF discrimination tap socket ,the basic setup for received ,159 MHz signsk ,,.. - PC board is secured to black the lid M3 ×25 mm tapped keypads pluggi into machine socket .. - precision resistor: -Lcd module: remaining components installer .. ---------- - digital insulation meter : 1) PC board ,code (main /dis)109mm×84mm 1)PC board code 859 (dc-dc con),70mm×51mm Ub1- size plastic box ,157mm×95mm,53mm 1)LCD modut,2 line ,16 character with back ligthning. 1 ferrite pot core pair ,26 diameter enameled copper wire , 1) 100mm ,lengtt ,o,7 mm diameter enameled copper 1)8m length of ,0,7mm diameter enameled copper wire 1)100 mm length of ,0,7mm diameter tinned copper 1)10×AA battery holder. 0,7 mm diameter pinned copt 1)2- pole rotart switch ,PC board mounting ,wit 16 mm,S1 1)SPDT mini toggle switch panel mounting (S3,S3) @ Min Dil relay ,spt switch p with 5v ,2) binding post ,Bana jack (1 red ,1 black . 24 mm solder lug.. 1) ,16 -pin lengi of Sik socket strips 1) 18 pin IC , socket ,4(25 mm ,m$ tapped metal spacers Block diagram of the ,16 ,bit digital potential the desired out voltage is entered via keypad and microcontrol IC 2 the correct binary number to drive the ,16 relays in the ,R/R ladder networks - arena loop , Experience trade mark , engineering science career ,motoring vehicle,power machine , engineering,trader Compagny,Transnet motoring career , ford career Engineering system and Toyota , nated ,, Magazine collection motoring reviews -rwiten oral relate : Specifications : - 1.engine: -cylinder : four ,in line transverse - fuel supply : electronics multi point ,injector -bore /stroke : 81,0/96,3mm to 87cm -cubic capacity : 1799 cm cube -compressiin ratio : 10,5 to 1 -valce gear : s-o-h-c ,valve per cylinder , variable valve timing -ignition :five -2Engine output: -Max power iso(kW)103 -power peak (r/Min)6300 3transmission: Forward speed -low gear: ,3 ,142 to 1. - 2end gear :1,869to 1 -3rd gear : 1,235to 1 4th gear : 0,948 to # Top gear : 0,727 to 2 - reverse gears :3,307 to 1 - final drive : 4,294 to # Drive wheels. : front -wheels and type - road wheels : 16×6,5j alloy Tyre make brigestonr turazan , Tyre size : 205/55,R 26 92v Type pressure front :

220 kpa Type pressure rear : 220 kpa - spare : full ,size disc 5.brakes: Front : 262 ventilated disc Rear : 262 solid disc Hydraulic : ABS , with end and bas. - street : Type : rack and pinion hydraulic ,speed sensitive power assist -lock to lock : 2,7 turns - turning circle : 11,6 metres - suspensiin : Front mac person strut ,lower wisthbor e gas filled dampers anti ,roll bar multi coil gas rear - capacities : Seating: 4/5 Fuel tank : 50litres Boot space. : 304 dm 3: Utily space :928 .DM cube - warranty and service intervals :. 3 years /1000.000 km warranty. 5 years /100.000km service plan Service every 15000km: Honda civic 1,8 Vxi; Volkswagen Jetta ,1,6 Comfortline ,ford focused ,2,0 trend ,, Toyota corrola ,180i Test claim t 203km/h top ,speed and acceleration to 100km/h in ,,9,44 second Honda tops at 202 km/h achieve the benchmark sprint in ,9,39 second performance - test data : .Amarok bitid ,4 motion Engine : -Cylinder / capacity : 4/1968 -bore and stroke : 81×91,5mm -compressiin ratio : 26,5 to 2 Fuel supply:common rail Injection - fuel diesel . -max torque : 400nm@1500rpm -max power :120 ke@4000 rpm - transmission: Shift type: 6 - speed manual - first gear : 4810 -second gear :2540 Third gear : 1.590 Fourth gear : 1000 Fifth gear :0,760 Sixth gear : 0,630 Final drive : 4100.reverse : 4.370 Loe-range : 2729 Control 4 WD selection type electron button Wheels : alloys Full-size spare - 2.measurements (mm) -height :1834 -length : 5254 -width : 1944 Wheelbase :3095-fuel consumption: 120 km/h ,,:8,61/km Urban : 9,8/km - calculate range : 688km - performance: 0-100km/h : 20,8 second 100-129 km/h : 4,86 second rpm @ 120km/h : 2100 -recovery point : Front ,,RHS Rear - underbody protect: Transfer case non Fuel tank : plastic guard Rea diff non - odometer 6,248km -load and towing capabilities (kg) Tare : 1848 GVM : 2829 CVM: 4668 Towing capacity ,unbraked : 750 Towing capacity (braked) - brakes : Front. Ventilated disc Rear. : drums ABS ,yes - load capacity (litre) Load box : 2520 - warranties maintenance and service: Warranty : 3year/ 100000km Corrosion ; 6 years Service plan : 3 years / 90000 km Service intervals: 15000 - guard motor ,police maintance Record Guard gold platinum ion Eligibility car _____ 17. Specifications:volswat golf Pricing : Test pricing Standard equipment; controle aluminium - general data : Kerb weight:1541 kg -length:4212 mm-width,excl mirror :1779mm -wheelbase :2578mm -weigth distribution front ,n/a - ground clearance : 132 mm - boot space : 275 litre,.. -utility space : 1305 litre - coefficient drag CD : 0,34 Seating capacity : 5 Headroom front : 987 mm Headroom rear : 979 mm Hatch lift height : 2017 mm - safety -warenty : 3 - years : 120000km -maintenance service : 5 ,years : 900000km - 2Engine: Type layout : 4 cyl transverse turbocharge . - valvetraun : DOHC ,16 ,valve - displacement :1984 cc - bore ,x stroke mm : 82,5×92,8 - compression ratio ,:92,8 -power kW : 188kw,,6000rpm -torque; NM : 350Nm ,,25000,,500rpm - power ,to weigh ratio : 121,8 kW/ tonne - fuel injection : direct petrol inject -recommended fuel : 95 unleaded.. - drivetrain : Transmission : six speed - gear : ration 1st : 2,92 2 end : 1,96 3 Rd : 1,4 4 the :1,03 4th: 1,08 6th : Body frame with .. Brake from : 345mm disc - break rear : 310 mm disc - wheels : alloy :tyre : - steerit : servitronjc - steert ratio : 14,96 - turn lock : e Suspt front : 10,9 m - susoenst front : Subjectivjy base averaged weights out Driver ,gearbox ,steering ,vraj ride handling ,exterior styling ,interior styling sear , ergonomic control ,luggage space , percentage ,price value - Performance: Accelerated: Speed / time 0-60kph / 3,17 sec. 0-80 kph/4,55 sec 0-100kph , :6,27 sec 0-120kph - quarter mil , soeedo calibration ,120 kph ,error ,,116 kph / -3,3% Overtake 60-109kph. / 3,31 sex 80-129/4,24 sex Braking : Average speed to zero 100-0kph / time / distance : 2,77 second /39m. -fuel economy: Real world test route : 72,3km - fyej used : 6,3 litre -our consumption:8,7 litre / 100km urban cycle claimed : 11,2 litre / 100km Co 2 emissions 195 g/ km

Fuel tank size : 55 litre - estimated crying Test conditions: test car odinetr : 5396kn Reading-temperature:21deg ,c Wind Locay ,test note : ---------- Car note Hon payment calculator based ,19 percentage deposit: 18.explanation: comparative test : Subaru. Specifications:-2Engine: Cylinder : four horizontally ,opposed Fuel supply: electronics multi - point injections -bore stroke : 99,5/79,0mm -cubic capacity : 2457 cm cube - compression ratio : 10,0 to 1 Valvagear : s-o-h-c bank four valve 2 : engine output ; -max power iso kW. 123 -power peak (r/Min)5600 Red line (r/Min). 6450 Max torque (N.m) 329 -torque peak (r/Min) 4000 3.transmission : Type cvt Low gear : 3,525to # 2end gear. 2,238 to 2 3rd gear. : #,641to 2 4th gear. : 1,194 to 1 5th gear. : 0,850 to 1 Top gear. : 0,850 to 1 -reversr gear. : 2,358 to 2 -final drive : 3,700to 2 -drive wheel : permanent ASD. 4.WHEEls and tyre: - road wheels. : 18×7,5j - types make : Bridgestone -tyre size : 225/45,, R2891 w. -Spare ,tyre and location ,spacy 5: brakes: Front : 294 mm ventilated disc Rear. : 286 m ,solid Hydraulic ,ABS. Breaker assist 6.suspension : Front : mac person struts Rear . Capacities: seating:4/5 Fuel tank : 65 litre Boot /utility space :348 DM.cube - warranty and service intervals: 4 years /100000 km,warranty ,3 years / 63000km maintenance. Test results: Maximum speed (km/h) -true speed. :210 -speedo calibration:60,,80,100,120 -true speed : 54,74,,93,,113 -odometer error :0,9 percent over. *Accelerated,second 0-60. ,5,2# -0-80. , 7,50 0-100. ,14/95 0-120 , 20,74 0-140. , .1km sprint , 32,15 Terminal speed : 264,4km/h -overtaking acceleration: second 40-60. ,/ 2,53 60-80/. 3,01 80-100/. 3,65 100-129/. 4,41 - fuel index : Manufacture fig : 9,2 litre /100km Car fuel index :/1 0,92 litre /1000 Estimated tank range : 595 km Taxable CO,2 rating : 214 g/km -braking test : 10 stops from 100km/h measure in second at ,30 second interval on good bitumeise -beat / worst stop : 2,70/2,89 Average of 10 stops rating ,2,79 excell - geardsd speeds ,km/h low gear ; 52 , 60 2

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Nd gear : 82 ;94 3 Rd. gear. : 11; 128 4th gear : 253 ; 176 5 the gear. ; 299 ; 344. - calculated at engin power , 5600 r/ Min and red line ,6400 r/ Min - performance factor : Power / mass (w/kg) 80 Power / litre (kW/ litre) 50 Power / litre (ks/litre). 93 Torque/ litre (n.m / litre Engine ,,: 1124 Engine rev/ km - mass tested (kg) - test conditions : Altitude : at see level Ambiy temp / barometric press ,22° c / 2020 hPa Test car odometer : 1765 km -150000km warenty and five t ,100000km service Comparative: Test summary class Hyunay test scores,25/29 Mercedes Benz blue efficiency,75/100 Opel Corsa collour - hummer H3 adventure Design and development the TBM ,,700 is singles turboprop engined low wing monoplane aluminium and steel construction the TBN product PT 6 A ,rates at 850 sho (634) ,,522 kW take off and landing cruise flight engin power,859 ,,634 the extra ,,2529 neutical miles (2829) -General characteristics: Crew : 1 or 2 pilots Capacity: 4 to 6 inclus on passenger .cockpit Length : 10,65 m (34 ft 11 in) Wingspan : 12,68 m (42 ft 7 in) Height: 4,36 m (14 ft 3 in Wing area : 18 .m.n (193.7 ft Empty weight : 2132 kg (4699 lb) Max take off weight : 3354 kg (7394 lb) Max playload : 385 kg (849) - performance: Maximum speed : 593 km/h (320 knot ,368 mph) Cruise speed : 467km/h (252 KTS ,290 mph) Range : 2813 km (1519 NM,,1784 miles Service ceiling : 9450 m (31000 ft) Rate of climb : 12,09 m/s (2380 ft / Min Time to climb to 26000ft ---------- Based . Price : | POA Number of seats and luggage : 2 seat ,34 kg - engine type : Lycoming -fuel burn : 23-30 litre per hour - tank capacity: 136 litre - range and endurance : 2384 km - propeller type and oper: sensenjc -undercarriage: - lead time orders: depend -standard avionics: vrf Panels - Speed |. Size |weigth Cruise:147 KTS| length 6,2m|MTow:794k Stall:38 KTS. | Wing:85 m| empty :460 kg Vine:171kts| height :1,8m| useful: 334 kg -pulk out plan Explanation VIP. Paint protection that actually works approved by major Manufacturing in South vehicle shield .. -bonnet guard , Headlight,front guard,side guard ,,repaired scratches ,stones Chios ,damage ,film removed ,film warranted 5years peeling ,bubbling and cracking -_____ Journey|price|engine|power|torque| 27sxt. | Maintenance plan: three years /100000km -fuel tank:78 litre -averagr sales per month -service plan 17..Explanation engine calculation How to calculate bore ,stroke displacement -volymetric efficiency VE=3456×cfm÷CID× RPM,, -Cubic inch displacement=NOC=Noc×SV - head gasket volume: HGV=HGCT×0,785×BORE: PVD=0,7854×Bore×DPD)+)+(VPD-VPB)= piston deck volume - compression ratio CR=1+0,7854×30RE×strokr÷ccv+HGV+PDV. +ISH=HP/16 : fuel system injector size per horse power.. VE: volume office, Cfm: engine air flow rate cubic feet per mine. Cid : engine displacement ,size volume cubic -RPM= engine speed revolution per minute . - NOC: number of cylinder -bore =length -stroke = length -HGV= head gasket volume Hgct : head gasket compressed thickness. PDV:piston deck volume DPV: piston distance Or .. SV= sweet volume . CR= compression ration Ccv: combustion chamber volume Ish = injector size per horse . HP: horse power--_____ 18.Explanation: engineering science ,stress,unity stress,type stress,unit for strain , elasticity ,hook low, straight, ductile material,young module elasticity.. -explanation : applied thermal engineering engine testing: structure .explain performance measurement:. -basic parameters: -measuremsnt of speed . - fuel consumption measure -measuremsnt of air consumer -measure of exhaust make -measuremsnt emissions. - measure of brake power : -measuremsnt of friction horse power. - performance of si engin - porformence Calculate speed in evaluation performance development : charge load - bp=2πNT÷60, break,,2πnt/60,, AL ,,N.K/60 -specific output: Specific . Volumetric efficiency n=mass of charge actually scke in÷mass of charge corresponding to the cylinder pond conditions.

-relative power air : FR=actual fuel - air motion÷stochiometric fuel -air (bsfc).. - thermal efficiency heat balance .. Brake thermal efficiency:= bo÷ m.f×c -performen e: Heat equivalent break work rejeter to cooling . - heat career for engin .. Heat balance sheet. Input | kW| %| output | kW | % _____ -explanation: construction techniques:. Petition: record - structure ,model aeriplane. section :;. Side : Model assembly details: Covering and finishing. Refinement. -------- -construction note Letter : ..... Materials:---------- -letter,|number|name|size. |Masse A. 1. Gear 1/4 , ---------- Seat,frame,back,fender,back,Fook, healings,front,front axle,wheel,gasttank,rivo.. ---------- three wheel motorcycle: motor driven car ,, - simplified concrete mensonery planning ,mortar ,concrete = A.P/s - ----------_____ - explanation study material and fire arm ,ballatisc Gun Typical muzzle energy of fire arm: _____ -fire arm (except |calibre |muzzle energy -air gun .Ek=1/2×v×v(2ft.LBf/7000gr×32163.f.t.t/s.s E=(m×v.v)+ K=450,95(2×32,1930,700)---------- -spefication -Calibration:9mm ,para ,40s , -ovarall length : 2184 mm. -barrel length :5 - high : 240mm -weigth:0,81k Construction slide Magazine : 24 round sign front ,GPS - test firing results : -Ammunition : group - factor : -41mm. - hand load :51 mm..note accuracy average.group..fired ,25 mm... ---------- -artillerie ,AM×30F@ Characteristics service - types : canon automoteur,utilisation Conflicts. -characteristic equipment : 4 home piece piloted longer left : 10,23 mm Larger weight:13;10mm Hight : 3,17 m Mass in combat : 43,5 tonnes blindage ,size ,case lunch.. ---------- -report installer: - mounting battery replacement step remote: - connection to the fence -connection , configuration -pc board replacement - service condity -Pc board ,F1,Fu ,18 vac fuse.. -Lcd display,18 LCD ,7,2 output in 500ogm Energy out put .500 ohm ,joule -9000v ,zone monitot,1/2 control display,2 max gate - gate and panic button input time gate ,yes - alarm output ,siren output .. -power consumpt under normt operational conditions ,18VA -battery time charge ,24h - solar power operational,60 Ah -wire in a Serie : galvanized : @,2 mm : 5 m optimal.. High voltage ,set point :10,00 volt ,set ---------- Balance rate installation: item..design draw element ,security access plan. --------- Card access reader mount type technologie. - biometric access reader mount type be specific. -keypad device. -keypad,kepead securt. -card reader with key.. - horn siren - weather proof him - horn ,strong - strobe. - car reader with turn attandance, Tensile,revolving door -traffic arm. -vehicle ,exit device , -smoke detector, -heat detector. -gaz detector, carbon monoxide,electro lock, push button ,camerarwite,camera ,with intercom, - security window scret ,heat detect, -window contact,vibrasic,glass,floor,car drivers,overload,dual tech ,contact saity,wall motion,floor motion, -beam fence distribution, - 19. Explanation : pratical school Disciplinary hearing school . trainings system orientation school career guidence : Experience trade explain: career skill -explanation: safe road usage teacher manual secondary: -explanation the foundation for road : Meaningful maturity,human dignity mordaly depending decisions,making responsible action , identification of criteria, phylosophie of life ,inclucating road safety , various level human , existing in frame of reference,co existing temporary,relation , - explant:the origin of technology and it's implications Forman ,technology and responsibilities ,Sens of responsibility and Education,the task of the school, requirements of the school,road safety and involved in accident, accident according degree ,type of road user accordt to racial group involved , statistics cost alcok poor vision . - explain: traffic training

secondai ,content of traffic , traffic situation,those involved,road safety , certain criteria for ,traffic training ,certain requirements , content method for ,youth levels ,abuse among , legislation and low enforcement ,vehicle ,trafft ,element , traffic hours . Trainer methods conversation,self , training, Education orientation, -expt differential teacher road safety education ,basis off teaching from road ,child involved , inequality child different safety Education ,road Education for school undertaking parent school local ,,locak - explanation different road safety education and the secondary: Education concept ,secondary school ,diffet road safety , Education central ,road safety ,road safety situation, road safety orientation,road saft Education road attitude , secondary child personal,goal diffential road safety,road safety matury, psychopedagogie persscpectuve, fundamental pedagogic perspectt ,social pedagogic , didactic , orthopaedic ,irthopedidact, realisation , opportunity and road safety education, The school , secondary child basic ,, - explanation:the methodology of road safety,goal of traffic Education , traffic lesson objective,the learning objectives, problem settings and problem solving , - lesson structure and form.. -explan group course lesson , actually preknowled, actually , unlocked of new , evaluation, group discussion,class arrangements,quality teacher ,skill the teacher and group,how to handle group ,group cohessiob ,criteria for judging the success of .. General methodology guidelines. -chao teaching aid road safety education : Teaching lessons modalities teaching didactic , a schematic presentation of Education , teachings software . Teaching wath look like ,teaching wath , teaching broad ,blackboard ,conograpguc teaching aid ,poster brochure model.. -thw sons box training ground the overhead projector , - the overhead projector film projector . -selecting teaching a lesson ,nature , didactic consideration, - road: safety ,nayv,point of contact in road safety ,few partie , department transformer provincial authority vlocal , evaluation .. -calcul situation traffic possible, criteria,test total traffic situation,different large ,self orientation up him self regards world self discovery evaluation accepted road,lesson telling lesson subject road ,time 35 minute ,lesson objecy explain pedestrian ,setting problem pupil ,stopping ,self realisation , instruction control .. Topics :Lesson objective to explain ,learn objective pupils must knowledge the application legislation and must able to mention aspects which ensures safe , pedestrian. - explain the problem: LinkedIn up knowledge pupi will be led to the realisation that injuries pedestrian behaviour is not only annoying to other dangerouse during lesson phase new content is gradually unlocked , - scheme consider energetic behaviour on pavement keep try to walk next another , stepping pavement intersection trafficking ligth buses getting out of vehicles. - the course of , actually preknowled the pupils citoyeb Saturday morning ask Unlocked behaviour pointed outcome traffic legislation is explained content , mentioned in problem solving is unlocked b, - explanation : functionalism : practising of acquired insight by mean model or diagram on the black board may explain how the will intersection as an assignment pupils observations and make annoying and effective behaviour of pedestrian.. -explanation defensive driving; road sign ,warning sign ,guidence , regulation sign , traffic bsign ,hand signals ,flag signal ,overhead lane flashing signals, road marking, - explanation: rules of road vehicles : control theory test driving.mirror blind spot ,signsk clutch ,speed control breaking ,gear change ,motorcyy ,board inspection , inspection staring , Explain manouvring test moving running left speed control changing ,incline ,turning speed judgement emergency . - the driving test : light motor vehicle, heavy motor ,the years ,staring procedure ,moving off , inclined ,alley docking ,reversing ,making a left turn ,hand signal , parallel parking ,the road test ligth heaving , light and heady . - changing lanes ,stopping

in traffic , stopping parking , turning at intersections, proceedings ,stop traffic sign ,entering a traffic circle, leaving a traffic ,block pedestrian ,level crossing , overtake,entering ,leaving freeway ,overtaking ,on a freeway passing , freeway on Ramp.. - explain test checklist record , faillure manoeuvre point ,exceed time limited 29/18 penalty , roadworthy, violation traffic low , uncontrolled action , dangerous action , collision, 20..Explanation: Management system information: pratical Science motor policy guard -statement of insurt; statement of the administration,vehicle eligibility, important servit,policy commence date, replacement of components,claim procedures,cover provided this policy , components Covered, beneft: classic,bronze silver ,gold, titanium, polyester ,ceramii , additional silucd , transfers it,exclusion form cover ,limit Silver,gold titanium ,limi of indemnity,wear and tear restrictions, consequences damage,cancellatt,jusdiction currency and dispute,fraude ,quality control,insurer rigth after , service history intarion , statutory notice , resolution. - explanation : road warranty all passenger commercial maximi carrying capacity 200kg , cover the cost service maintenance accident ,petrol engt service relevat as . -displacement interval .petrol diesels electric maximum service run over if 1000km or 30dats occure RMI repair claim , - policy vehiclt schedule still subject to Manufacturing warenty plan motor guard plan. - faillure occuring 39 days . - replace claim process in event of mecanique construction fail occury. - Owen ,policy number , current kilometre ready,partict of clay ,item cause quotation,address vehicle inspected service record invoice submitted with 45 days , benefits ,5 years ,120000km ,18 years ,160009km - description of good stolen property must descrt very accurate bear it in mind invest official searching good , -makee or manufacture ,modej not years ,years of products, serial number ,registration ,engine and chassis ,size ,colour ,completed ,state midst iteb ,charge that change , _____ - 22. explanation: industrial administration management - explain : general framey historical background complexity of management - general princy and groi of management thought. -growth of management the pioneers - outline of managet theory : definition - business orgat: organisation the diviy of managet, -growth of organisations stage growt ,orgabiy chart , organisation rekatu, - organisation problem : corpsratt planint traditional and modern organit theory future reauit , - production marketing and admnistration. - organisat and the manufacturing fynctt stage in production manufacti,organisation of production the manufacturer functions: -:Products the ancillat functions b; maintent production planning and control store keeping purchasit handlit of material. - products the advisory functy : work studye time ,method -production the advisory functions : work study time study methods work study , ergonomic , operational research inspect. -marketing : marketing's organisat: admnistration area ,personek management wage. - growth of industrial relat: trade union unions emply associt collective bargaining and joint negotiation: - personal managent : motivation of management content of a personal policy achievement of harmony of objectiy: - the person's department staff recruitment, the manager . - personnel functionalite organisation if personnel department staff recruitment sciencetif selecti - job evaluation and : wage structure determining the wage structure merited rating personnel problem induction training wage and salaries: - personnel problems: disciplinaire promotion safety labour turnover management by participation personnel statistics ., part four financial management and statisciak .. - financiere management : scope of accounting provist affinaire source of finance. -outline of financial and cost account definition the purpose account , fundamental accounting transit from financial to cost accrost , classification. - of cost controlling

cost absorbing factor .cost miscellaneous overhead absorpty , overhead facially .. -cost account system : process casting batch costing hybrids costing ststt organisation for labour orgat for material cost organisat for overhead .. - method of casting and control : marginal costing decision . - profit and efficiently and loss measure capital expendy decision . - statistical method : Chart and graph statistics quality control . Designation experimt time Serie published statisic.. - part ,five the industrial environments: The middlege to eight center the industrial revolution from development of large .. - principal development in some ,major : coak iron and steel engineering textile chemical and artift fibre ,scienty research.. - the economic ent:.demands and supply cost of production types of compety resale price maintenat the general economic situation. - general principles of financial and visit low banking and finance trade credibly commerce the merchant bank and issuing house hire finance industi and commercial Indy corporation for industrial negoy instrument. -government and industry: introt devet of govert organisation of control . - necessity for government control : - element of legaj system : the low modern communities source of low common low system Englanders and Wales legal person the idea and property. - general princiy : of contract princt of contract and commercial law ,contract ,tart liability for dangerous premise agent sale good , miscellaneous commercial low matter, - elements of industrial low apprenticeship contract of employment factories act Offit premise ,act social insurance industrial arbitration industrial relations general managent division function .. - explain award bid clause ,price industrial minimum salair ,flow manufacture process lighting tube. Design process: Order ,item price : product case 24. Explain: pratical school regulation and irregularity Vocational guidance theory and practice: -1 vocational guidance , -2 explanation: psychological explanation of occupational trait and factor personality

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development , social learning ,decision making autonomy, -3 explain sociological explanation of occupational ,choice class gender ethnicity group , opportunity structure an interdisciplinary framework. 4- explain , the interview: philosophy, structure questions talking silence , listening ,non verbal communication information and advice. - 5 , explain traite factor client centred , psychodynamic, behaviours problem silvt , fantasy,the place of counseling in vocational guidance. -6 Career Education: explain objective: structure and occupational information the curriculum evaluation. -7. Test interested questionnaire,self help instrument computer based guide special program - re written career guidence ,total faculty subject total grad time table Admi total grand reason career .-explanation: study of occupational ,self study of occupational. - qualification obtained your present position how college. - how to choose career,: knowledge of occupational finding about occupation , know yourself. -how to apply find employment,way find . -how to apply for work . -how work relationship, introduction, different kind ,your concept relationship .. - communication ,danger --explain , psychological test : instrument , mechanical and technical aptitude. -qualification| work do to choose career - occupation | social conduct , relation social . Psychometric -Personality and aptitude profile confitial psychology Name : Interest ,| attitude | verbal reasoning , vocabulary ready completed| factor | personality - test results reported | survey councillors . - profile / v(y) ,, Batteries , _____ -explanation tpm is profitable,direction in production achievement zero breakdown the parko factory. -RPM challenge limits from four devet stage , definition and distinctive features Tom striving for overall equipment effectiveness tomb,defect prevention system ,between , Tero technology and -explain: maximizing equipment effectiveness , equipment used at half effective. - breaks motor stoppages imped automation stop acceleration the deteriore of equipment. - explain preventive maintenance alone cannot eliminate breakdown five counter measure for zero breakdown. - unlicensed operational of automated equipment errors equipment investment, five tpm development. - organising for tpm implementation the twelve step . -step ,announce top management decisions to introduce tpm ,step 2 : launch Education companies. Step 3 : establit create organization's promotion. - established basic Tom police and coak . -formulate master plan for tpm .. Tom , implementation,and stabilzat. Step 6: hold Tom Step 7: improve equipment effectiveness. Step 8 : estabt autonomous , maintence prograyfor operational. -step 8 set up schedule maintenance program for maintenat. Step conduct improve operation and may skills ,step initial development equipment management. Small group. - integration small ,small group goal coincii with goal , - evaluating the maturity of small group acty the functionalite of top many in small group . 25.Total maintenance product,,meeting police ::---------- - explanation: director social worker practice theory and skill, - explain social work,an overview. Direct practice domain phylosophie and roles . - overview of the helping process. -explain operationalizing cardinal social work. - relationship building skill community with emphasis and authentic. Verbal following exploring and focusing skill,eliminating counter productive communict patterd multidimenst assessment, - assessing intraperst and environmental system . - assessing family function , forming and assessing therapeutic group,enhancing motivation,with involuntary and ambivat client,negot goal and formulating contract . - change oriented phase ,planing and implementation change oriented strategies. - enhanced client problem solving skills assertiveness. - modifying envit developing resource and planing ,.additive emphasis interpolation confrontation ,managing individual famili and organizat barrier change. -the

termination and evaluation phase , Explain : final phase termination and evaluation of code ethics,timing and intensity ,of self disclosure. -A paradigm for respond authentic stimulation client message. -Fuel for authentication response.initiated by practionner. - positive feedback form of authenticity response . - relating assertivei to client saying no and setting limit, - exercise in responding authentication and ,client statement model resnse ,in surface underlying feeling , answer to exercise to discriminate level of emphasize response. - explain: verbal following exploring and focusing skill , maintaining psychopedagogie contact with clients exploring problem. Verbal following furthering response ,paraphrasing response,open and closed end , responding,client statement,seeking concreteness ,modeled response , summarise response analizing verak following skil , - focussing ,a complex skill selecting topics ,exploring topics depth blending open ended ,empgic response maintained focuy.- evaluation used of focussing , response ..to exercise,answer to exercise identify in close and ended response .. -explanation : eliminated counter productive communication patterns: impacts of counter productive communication patterns : eliminating non verbal effecty communicay culture nuance of non verbal ,other inventory of non verbal patter of responding -communication barrier eliminate verbal to effectively,gauging effective response the challenge of learning new skills. - multidimensional assessment, critical role of assessment , -assessment an ongoing process , assessment as product,include strength in assessing,sources of information verbal report.direct observations of non verbal behavt observations interatclient monitoring collateral source of infot. -psychologi test , -computer assisted personal experience based on direct interat. - the importance of self awareness. The multimensionaliry of assessment. -the problem identify the clarity ecological factory assessing devetneed stress association. -key factor to be addressed. Manifestation of the problem, participate -explanation: source of information verbal report.direct observations of non verbal behaviour, observations interactive.client self monitoring,collateral source of information. - psychological test., computer assisted asssessor personalite expression based on direct interaction. -the importance of self awareness. - the multimensionaliry,of assessment,the problem identify the clarifying , ecological factory assessing development, participants and system implicated in the problem how participate. , development stage and life transitions. - severity of the problem meaning client to problem. - site of problematic behaviour the temporary context of problematic. - frequency of problematic, possible alcohol, substance. - child maltreatment.and spouse abuse . - client emotional coping effort skill strength and skill of client . - cultural and social class factor questions to be answered assessment other factors . - assessing interpersonal and environmental. -the interaction of multimensionaliry humans the introper system , biophysical characteristics presentation. - physical health cult factor in social support , assessing use and abuse of , alcohol and drug , effect of abuse alcohol dual diagnosis in , biophysical social , using interview skill to asses possible , alcohol ,using instrument and procedures assessment . -assessing abuse ,use of instrument and procedures ,conveying assessment finaling client.genetic factor psychiatry. - cognitive , perceptual , intellectual judgement , reality testing, cognitive flexible ,value misconceptions, concept, interaction between cognition emotional and behavioural, - emotional functionalite, emotional controls ,range of emotional, appropriate of affect ,assessing effects disorder ,bipolar effective, bipolarity ,assessing social,.- : motivation: precipating event and motivation,in volunteering client ,culture norm , different, determined pattern degree of acculturation , bicultural and mental health .. - fluency with language problem solving , achieved

credible, providing immediately benefit attitude ward , environment health and safety factor environment resource universal need identify relevant social , system social support system . - negative social support system assessing reciprocal interactive between individuals , instrument to , environmental need of disabled. - assessing family function the evolution of family system. - system framework for assessing . - family functioning , family home , content process of interaction.. - sequence of interaction employment circulum explanation , assessing problem. - outer boundary internal boundaries and family subsystem family power structure , family decision making , family and range feeling ,gosk , family myth cognitive communication styles of member , - forming and assessing therapeutic group ,classication of group formation of therapeutic,group established group purpose,Agence and practitioners perspective. - established specifications individual group goal.. - conducting preliminary interview. - group composition. - open versus closed group ,size frequently and duration meeting. - voluntary versus involving .. - assesin group process, assessing patterned idify group alliance , group norm value , -enhacing motivation with involved , applying concept from social, initial contracts structure of initial interview.. - using confrontation facilities. - negotiation a problem search bargaining with clients getting mandate off your back .. - exploring self defeat consequences,resolving ambivalence in family creating incentive culture hope , highlights strengths modifying cognitive self . -negatiatinf goal and formulating an rational contract ,purpose of goal ,type of gosk , guidelines for selecting ,process of mutually selecting .. ---------- -26. labour relations in education . - termination for labour in education - act and bills for labour low in education . - explain: an historical, clarification of concept the development of labour ..- the of exploitation racial discrimination, Explanation: era of advertisement ,the era code termination and cooperation. - development of Education labour relations. -sources of labour , labour relations and the constitution. -the common low and labour legislation for Education. -the rules of natural justice., -the contractor of employment,labour relations act and related labour low. - labour legislation for Education - individual employees relation . -defining employees and employers in education. - employees right of employment in education, - employees right of employment in education , - fundamental right . - duties of educator as employee .-dumie of employees Skill development and Education ,national skills authority ,seta for Education, - learnership in education , - collective labour ,freedom association, organisation right of trade union ,. -collective bargaining in education,collective agreement,managing industrial action strike and lockout. -responsibilty of manager , - procedure during strike ,duties of manager , established and implementation..- fairness in workplace disciplinaire: - substantive and procedural fairness,fair unfair dismissal , progressive disciplinaire , - workplace disciplinaire Education: - incapacity ,poor work performance,defining poor work, procedure incapacity, health injury , definitely health ... 29. Explanation : - Principle of commercial low : Large credit ,agree small intermediary, - explain: size of agret, regulation, concellation of registration of credits b, - registration of definitely counselor credit . - consumer credit policy. - source of the low , statutory low or legislation. - the constitution . -the customer low,judgt of the court ,old authority , foreigners low , case discussion. - the court in republt t constiy court , - the constitution court . The supreme court appeal ,high court officer of superior court duty -officer the supieur court duty process master . - magistrate court . - doctrine of store decision ,Cree case create judg . -application of the doctrine : - interpretation status : the relationship bet the star decision rules the general principles, - court judgement : ration decides . -:the term : low

rules ,meaning low rigth, legal subject legal objt, intellectual,private low , protection , servitude bself defense provocation . ,- term of the contract : essential natural and incidentally,condition ,penalty - contract of sole: the our,chosen is entitled to be protected by seller again b,for content , - indemnity insurance. - determinat of the amount payable non indemnity insurance ,value house ,. - relation diffusion form intellectual, - franchising : mediation, arbitration,award Statutory arbitration,source of the low of arbitration ,matter excluded form arbitt ,national cause ,matter relating to ,criminal case ,validity of arbitration agree ,the arbitration agree ,the power of court in relation to arbitration agreement,stay of legal proceeding where there is an arbitration agreement appointment of arbitration,power of power of partie , appointment of arbitration ,power of partie to appoint arbitration to fill , termination of an arbitration , - notice of proceedings partie , summing of witness and recording , evidence manner of arbitration award the act ,time manner and publicat of award refused to sign must does not invalidate order specifications,setting a side of award ,cashing of cheque,the relationship between card ,issue and card hold traveller ,the low of trust basic feature a ,trust transfer control ,, right consequences of windings the effect of windings, liquidation meeting land proof ...- the low of administration of estate ,the executor ,appoint , furnished of security removal and dischat ,master , preliminary work ,death notice , letter accept ,band security ,making over in space ,completed sell , redistribution agreement payment to creditor on brief 30. Explain: practice school management -management characteristics of management styles the main components of . - planning: explain planing cycle different level of planned the need for planning policy general guidelines for effective plan - explaun : step decision making ,routine and innovative. -explain : time management the importt plannit way in which time is wasted making effective . -explan time table drawing time variouse , drawing up time various types of time table .. - the annual programme , purpose of the annual progrt consii drawing, - plannt preparation and record and keeping. - culture activity in the debat society youth activities religious movements , competition. -explanation sport actuy ,the aim of school ,sport police, - basic requirements for successful organisation and control , organisation of sport various.- the education value wells organised . - Education execurssion - officii applit for sport. - officit applit plannit and organisations, number of excussioner ,prior asssssmt ,follow up teach. - follot up after .- teacher and human relations ship ,teacher and authority ,teacher and the princit, teacher and principles,teacher and colleagues,teacher Nd pupils teacher parents .. - class organisation and routine . Definition of class room management.the relation between teaching class manager , - the important of classroom management. -element if classroom management. Organising the classrt to create atmosphere for learning developing an effect classroit routine. - furnit arrangements changii classing storage and stirat facities.. - laboratory organisation pratical work . Grouping and teaching. - the structure Education department,head office advisory council for Education and training, regional control , circuit area office board of control ,board of many ,school committee hostel board ,parent teacher . - type of schot secondary school ,special school the . - explain correspondence and filing system: -the prescribed filing system ,subfiles , Directive regard mail ,register The school journal ,the visitor Matter arising from incoming corresponding. -explain : in service training: in service training for staff development aims the in servit training. -the task the principal: substance a travelling allowance Decentralized in service training role of head office in service . - delagating : What Delagaty means ,who delegates , in the school , difference bet ,the of delagatiib . - - co ordination : co

ordinating teacher work ,subject meeting , coordination pupils , - performance: perfot appraisal performance appru , performance effective common value ,reviewing and analyse career development.- staring equipment,storeroom ,stick keeping teacher in charge ,papper order book kept number item , - safe check labo rules maint conductivity head office directorate ...- responsible post school ,power durie . - didactt oriet instruction and learning , Didactic principt condition ,the currit ,aim of the currit ,the selection and oral,(arraignment of learning .. - dudacting method and each ,lesson presentation evaluation .. - defining didact science pedagt ,.- didact and other relating teach ,didacic . - the didactic activit ,the didactic situat,general peadagogic andragific . Didactic environment. -tsxhook as didactic nature and structure ,task of the ,teach learning ,tertiary education institutions non firmaj cybernetics ,system theory . ------- _____ explain: activity guidance, -explain : self knowledge psychopedagogie , decision making stage , - choosing partion,examinat,tertair Education ,social conductor ,human relationships,the work. -need that can fulfied through work ,the career attitude towards. - testing: questions such follot may be set nocturak pedestrian shi preferably. - a grupe discussed: stlabutthem courtesy and road usage -the educational objet:to orientate the pupit in the relationship between coutsey and responsibilities. -the learning objectives:to identify the character of courteous road usage determine level . - to accept a losit attit award the requirements. - explain : solving problem : during the unlaxjinf of new mean of discussion teacher must si that follotbasic fact concerning courteous road usage trafficking. - pupils Alfred have knowledge: steering : it is difficulties to determine the main character the relation courtesy and is not clear jointly lesson problem is formulated .. - good maneee : unlocki new content pupils asked traffic low pupils matter how disret further points , - dunctt: characteristics of courtesy can applier motorcycle .. evaluation pupils completed self questions,@= alway, 2 = often ,seldom -

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traffic ,control - questions: wath is functt if a lesson objective ,his is lease object ,why is formulated of a learning objectives important in term minimt an skill level of achit. - why is lesson problem import give 4 reason..-what us primary with demonstrate lesson .. - wath is importy. - during introductory phase of lesson them . - which important prerequisite applies to group ...-----_____ 31. Life training religious,Cristian culture, art buchellor : Explant: administration Guide master form - explain spread gospel pratical & Admnistrat Guide master form , - questt after asked about . - introduction letter church member... -suggested sheet adver,suggested 1st years scheduled (33 weeks , - application form admnistration, -student address planer, -recors of tests marks and exams ,paymet of fees register, -attandance register , assignment register. - order for code cost and note ,record of orders, -certificate warding sample in cover ,-bible school survey compus registraty. -please take book apart except the last two sheet important documents read, certificate sample , certificate merited , certt Christian service ,diplome in Christ lead ,certt in word minister,licenciate in Christian ministries .. ----------.... -32.explanation: marketing reseat the research process and problem . - structural eqt models ,neural networks,social net,- analysis ,factor analyse ,cluster analysis. -cass part , winscon power,stormt equt,canopy of core ,canopy production, food ,transitional housing ,picty word megabyt of ...- equipment,fabut -research report ,fundamt criteria if form of report the oral grapt presentation. - students guidence to office autimat : . Office start four kinds of infot infirmat processt operational office ,procedure office system office, - example of an office system designing and office ,system the impact of office automation on job. -office automation hard , - computer and office how computer work disk drive,work disk driver input output ,device networks other office automation hardware. -the electronics desktop,system siftt ,operating system task operating syst command . - operating envy. -recors keeping : record keet concept ,record keet task ,record keeping application type of record keeping . - software . - choosing a package. -spreadsheets: - spread sheet and database packau ,spread sheet package other spread sheet facitie and graphs spreadshtappli a.. Item loyal customer te - 32 explain: Educational the Mrs in time perspective. Explain peadagogic and perspective history of Education development .- orientation : Greek idea sophist concepts ,Socratic idea of knowledge the platonic concept ,Aristotelian idea on the infrastructure of Education ,the stoic Telos formula , - Roman idea , earthing Christianity ,media volbidea ,humanistt ide ,pedagy becomes ,pioneer of peadagogic founder of pedagt become science of historical original and development . - methodology of the history of Education.: orientation field of reast nature of problem of research ,general methodict,post minded futt ,factuality individual b,open mind , Conte temporality , setting the regret methodology unrestrained complexity present and future ,nomothecity .. +Professional competence personal enrichment.comparaison ,method approach,basic science method of investigation,them design field ,invesy of contemporary them , hypothesis formulation, investigation ,collecting data making , established information Education ,interprefinger data writing, approach for research, problem historical problem historical anthropology approach Mets bletic , history. - explain : development of higher education in general.comment , concept higher education a time instituts history functioning ,modern ..-explain college university criticism , justice. - established ,some .. - English education system ,control Education used ,aim content , - note ,the act preamble to the act ..some stipulation---------- Aspect of the provincial Education system : - Education control , religious instruction,teaching medium . - a natit Education

dispensation coordination uniform in education matter , preliminary work for new Education dispensation .. - policy keep with policy principles : change in some important Education matter , preliminary Education primary and secondary , division to schools course , the grouping of school , provincial Education , ---------- -
35 .explanation :General psychology low - the identification of psychopedagogie two , -method of psychopedagogie test nationalism the experiemental testing the experiemental method the clinak methods, naturalism observations testing ,the functy of theory test verification , modification form of modern theory . - explanation of behaviour reductions, explanation pattern , psychopedagogie influenced school of psychopedagogie present phylosophie - motivation , : explain motivation questions acquired classifying working . - biological energy recurring need measure activai stimulus transaction - discrimination conditions: other classically conditions response , instrumental learning and operant conditioning..- - reward and principal of reinforcement three learnings situation narration rewards non continouse extinction, stimulus generation learner reward negotivr reinforcement and motivation. .-learning : selective discrimination learning ,trial and error multimensionaliry learning.. - motor skills learnings motor skills task distribution of , transfer of training feedbay knowledge. - verbal learning : general procedure verbal rate presentation vfactor some interpretation in verbal learning transfer of learning concept.. -cognition memory: Measurements of two factor of retention,short term memory information processing memory control language, development, hereditary some genetic principle . - maturation: patterns of development maturation and experience. - some devely topics : perceptual development language development of intelligence development of socisk . - sociality interiors change communication society .. -consumer psychology: attention getting methods effective of advy other aspects of , structure,purpose Personal patter animal socisk manipulation social acquisition. -motion : emotional in history analyse Lyman emotion physiology functionalite, facial expressions. - acquisition emotional: limitations emotional conditions, learning developing and maturation of emotional,theory.. -psychologicsl stress: selyes ,systt stress psychological stress psychomat. Perception : receptor function:vision audition ,faction and skin sense kinds, - psychophysic : detectsbily low sublimation perceptions scaling ,.- - organization's : reception audition faction the skin equilibrium. - origin perception: development perception at distance visual depth movement perception,sound locaty colour perception colour their... - subjective color after effect illusion. - attention : matter orientation Tracy passive stimulation select. -attentiin analyse : neurological attention negotivr didactt listening institute , attention brief stability. - conditioning : the learning concept classical conditioning ,temporal relation extincty recovered higer order classical response .. motivation .. _____&&_&& - learning and memory at school in Learning psychopedagogie persscpectuve perspectt components of the learning memory. - model , - the affective level of the learning memory process sensory memory. -the cognitive level of t learning memory process Short term memory -the normative level in the memory process long term memory Long term memory epis and semantic memory why do pupils forget learnings . -learning subject content school - ainm ,learning model for subject content planning phase , planning and preparing subject content effective learn ,planing execution phase.. - step in the learnerinf process with reference to learning pattern level of drilling reinforcement and competency , -product phase ,level of proficiency,level of structure complex , monitoring the prodtphase. - communication the teacher as the exponey Education in transition teacher communicayteach ,communicat process ,general

process. Communicator style noise , - Educationak medit for effective teaching media practice subject : teach computer in education class PC Education use for teaching - learning purpose :.computer aide instruction single PC managed available and placement of teacher : - social aspect of classroom practice Communication classroom , emotional aspect authority flexibility. - acknowledge of father people motional encounter ,transfer of value personal aspect distance. -function of teacher task directed functionalite of the teacher the social emoy group . - life orit: explanation competency life skill ,type of skill life orientation study research in respect.- -role : of the the church in realisation the role society . - the role of occupy life in the realisation of wath do emplot exception terrait planing for life skill trait. - explain definition terrain delimitation,the desit of programmtfor skill training a primary or secondary,CVS develot ,life skill modej ,religit Education theory and lrat. Agraindinf of the subjey ...- - handling of pupils of : Motional assisted.. - benefits the individual , orthopaedic they _____ Explanation: teacing the practice of nursing a text nursing didactic th. - nursing educst the phylosophie of nursing ,nursing educst . -the scope of practice of a registered nurse . - the scope of the role nurse. - the scope of pratice of enrollment nurse . - the independent and dependent of nurse ..the independent functy of nurse . Phylosophie of nurse ...- the historical of nursing education outline ,:introduy , nights syst, amercain system ,conbtini. - purpose : and object nursing education.: selected of Education object in nursing ,decide what student ,plan implementation plan , evaluation. - authoritie responsible for providing education . -regulatiin affecting nursi Education: Regulation country council ,RSA ,training registration and enrollment ,types course a Aila le registration, --_---------- ------- Safety health aid tools hand ,,,. Education safety health occupation,security. ,, ... Explain: what is pedagy importance of pedagogy in teaching and learning process , - what is pedagogy, - what is the pedagy in teaching, - difference between a pedagogical approach pedagogical technical. - type of peadagogic, - role of pedagogie, - pedagogie is method of teaching in theory pratical understanding student. - pedagogie in teaching in refer educator student lead ,LMS , construction. - teaching quality of teaching, encourage cooperation learn , eliminate mono learning. - pedagical technique ,a pedagogical technique. : defines a set of action performance by the teacher in the classe for teaching include flipped learn learning computational thing and stepped learning it is more granular Thant . - technological pedagical content knowledge understand of how teaching learning can participate framework an education. - technologiCal pedagogical content knowledge framework integrating knowledge record. _____ - Engineering pedagogie educating ,focus if view of engineering pedagy is the development teaching concept creation for the preparation of further Engineering leadership roles changing . - explain problem base learning TVET engineering electrical, _____ - explain ,educare qualifications has been designed for people love work with children be able growth development child phrase .. _____ -explanation psychotechnique ,: system of actor training preparatory Deve theatre practical test measurement large verbal numerique ,test permis, suspension, permit v. QI. = Quotient intellectual ,age mental /age chronological . recruitment test suit logic. Is used to determine the degree of extrave Ce emotional stability professionalism ,as employment,is concerned accord board dimensions psychopedagogie. - _____ Psychometric test : the main goal of an aptitude test is to ensure that a candidate passes the amount of skill and cognitive ability to perform the

duties of job role the common skill set measure test numerical verbal and non verbal rea ... 39.Explain: pratical school , orientation industrial trade Pratical nated , - promote standardisation in trade and industry is one the objective of council ,CSIR -orientation industrial in electrotechnology.standard industrial draw and label gate by EIC system gate output,,explain neer . orientation industrial : in electrical trade theory ,domestic appliances: type machine washer , ,,- maintenance out replace element tasg ,replace ,stei pannej ,, - orientation industrial in plant operations theory ,chemestrt and chemical processing ,cellulose fibre material ,manonr,readrvcombustion fuel and thermal insuy,,transfer heat pump, mechanism , convection. - orientation industrial advantage close cooperation compagny ,industry ,, Functionalite supervisor control responsibility,the aspect to prevent is to teach workers not tact :teach work Teach worker. Discuss different between Education and training .. government instituts. - a supervisor realise account organisation position direction tools ,, - importance diRectiob stragie ,operationel ,, - supervisor selection worker job tools need , employees training performance - operator is need mechanical workshop machine operator for stocking material - industrial orientation in trade electrical Operator stock material orientation, By protection ,heart, illumination. Application , equation AC ,DC -_____,_ -In dbe to isita project to teach workers In dbe teaching worker training direction practice workshop dbe ..compagny corporation City power Eskom : exam national DBE ... Explanation , orientation industrial vs manage supervisor,vs management system information vs manage system information in education key challenge n Career posting time table counseling: trademarks industrial compagny trade theory license and trade pratical license. Orientation industrial Teach sork disciplinaire work communication skill team study team operational discipline teach counselor assessment and facilitate team value Journal classwork average score Counselor statement ,by psychometric goal work counselor conduct misconduct coursework engineering Counselor engineering studies creation Portofolio assessment,and planing by ruling courtesy low common . In dhet ,,in DBE workshop technologie Counseling project by orientation checking low outcome workers project isita umalusi electrotech EIC commissioner in job experience -Minister creation secret arrested ministerial letter appeal step. Minister dhet and DST building infrastructure government system careers creation authoritie building creation, counselor conductor, complain compliance duty Orientation industrial guidelines project workplace disciplinaire, questions number of task number job project marktrad licensed , -appeal release result irregularity,non accreditation school instituts research trade training to minister ucpd , development isita creating DST ,supplier profile , regulation,minister irregularity creating diploma technologie system DBE and recreating system backlog ista Teach appeal low Education processing learn ,by abscent Clauseoffice ucpd record learner orientation ministers teaching students practice counseling orientation industrial and marking process presentation ucpd and DBE system was learn job in trainer training . - explain: isita project orientation industrial counseling experiemental - pratical experiemental irregularity assessment. back log ,,time table n4 ,,and time table n3 trade theory examination .. Irregularite suspension 12month ,n4 rwiten final n6 ,n5 final examination,final soon n4 examin irregularity final Examination assessment years academic final , -Level 5,6 framework qualifition letter no qualifications isita back log . Irregularite: 12 additional information pratical process learner completed: Management system information Level 1,2,3,4,5 vocational principle police theory ,applied resolved Orientation: principle . information management system: Pratical 12month ,18 month pratical subject pratical

exam school . Topics test n 6 .. -in high Education subject assessment moderation project: In dbe subject it orientation vocational guidance: outmark DBE filing pratical Poe s Isita project student make computer Learning lecturer computer subject , orientation skill training computer system - information system , :computer - quest operating system ,display option control panel gives , - system tool data computer . Option , change display ,system defragmentation display.. - uninstall program system programs feature ,, physical formatting Calle relative , ram room cache memory ,folder created. - Process of converting or data into prevention b, software , fraudulent vpratice email personal information ,infects . - format pictures style drop ,use ,,spread is opened ,insert formulae .- appropriate spread sheet v. - appropriate functy determinat the price contract router .. - computerised systeme Create a news set of name select file compagny , - compagny parameter , business - word processing : create services invoice ,use Arial 12 pt , all .. - leave two line space , key ,, - unit and replace word megabity ,save file A,,fibre .. - irregularity,isita project back log record complain subject .. Assessment mathematics: - Orientation industrial and trade mathematics :teach workers ,trainer workers supervisor ,standard measure -Management supervisor, :mathematics Computer system management -geometrical, algebraic ,limited , dervide function Prove ,radius area high calculate approximate change in volume: V= π.r.r.h -use partial fraction to calculate b.. -determind particular solutions integration. - sketch the graphs of , the area bounded . determine the length of curve , equation, - calculate surface the curve , x ,y is rotated---------- -- Engineering ,orientation industrial: engineering physics T# compression : Heat heeded to bring heater , Heat gained ,heat lost - electrostatics: Power = w/t the amount of energy . - heat gained ,atom , frequently ,the energy of each ,,thermionic ,optical ---------- - electrotechnical : DC : excitat motor control obtat adjust, Alternates - power

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developed,rotor output ,, Power input = rotor output rotor . Energy Industrial electronics ,transient ,calcul value resistance to allow oscillation , Transducers : standard current ,step .. - ultrasonic x -rays and radii activt: the energy can transmitted the energy genert high , - electronics safety device and electronics ,regulator system. -thyristor device and scr speed . -,programmable logic controller.. Pratical industrial in dhet high irregularity regulation material project ,, Outmark .. - Counseling: project In dbe project workshop counseling Management supervisor workshop engineering,isita record academic ucpd Create diploma: certificate Counseling industrial electronic electrotechnique mathematics ,in trade theory electrical ,material irregularity DBE disciplinaire 11month suspension marking progress .appeal minister Pratical, action take occured irregularity and complain address ,, qualifications subject: 18 month technology guidence vocational module. Explanation : career vocational science ,, explanation low Portofilio. The police introduction - section Career orientation profile, -selection process ; choose career answers. -question reward live leave , professional answers occupation. - student guidance counseling police opportunity,, career understand job sleep skill , duty correlation, - peace officer preami,duty assignment case involy policing ,salary career allowance, duties securite function compagny invesy,older private police no longer existed replacement ,in function ,police minim case senior college orientation profile,psychometric , polytropic test college Deb employ , task physical , deduction probation life insurance, professional, listening ,career ,profey a matter an amateur career ,Unifor report ,court syst , division Pre trial paralegal ,, - police officer entrance exam police measure the basic skill ,exN read word duty - what is community oriented in policing range , innovation organisation police improve skill project build communy , procedure,practice , activities residents ... Explanation: irregularity Error test used for diffece between two independent sample satisfactory distributor performance: - service ranking ×1 overall,raking difference ,d1=y1-y2.(Bid sum .d.d = s data analyse invest assot agreement irregularity and back log project trademarks nated in job ,step process respond , provisional tax payer and penalty , understand and late submission,file Portofilio education trade , ,maturity date Poe s social award student , coupon rate 14%, internet,tendered bid or submitting 12%, tendered assumed accepted ,(1009),I R 709 interested,pay + c / 100×d, 3609,c = rate interested order ,d= number of day , 60 day proceed,R,1000=(1000×17,49,, denomination acceptance capital emploie, capital reserve resent taxation total assets liabilities balance sheet,manufacture -pat total retrenct , provided tax liability,salary and interest tax sum tax norm tax tax free portion award , provisional tax ,income salary overtime , allowance award irregularity plug ,equal renumeration leave,less acceptance of quotation irregularity and back log . _____ 40..Management administration industrial , - products maintence tpm - H: rate of Quality products 98% ,ideal cycle time=0,8minute, f: actual processing time + j×g=0,8×400 t availability= s/c×100=400/600×100=87% -(m: operating speed rde= I / jx 100+0,5×0,8×100=6,25%,, - net operating rate = f/e ×100=(0,8×400)400×199+80%> I: performance efficiency ,+ m×n .100 +×100=(0,8×4000+80% -net operating rate = file + actual processing / operationek -process amount × actual cycle to operating+ 400 item× 0,8 % availability, Avat + operation time / loadshedding time day academic record and Pratical -net ... - time loading,400 Mon × 109+ workplace record accuracy,process running,planned down ,lost process ,time c- d ,, processing time ,, j×g operating time finished , external total, quantity processed ,total including losses memory , attander ,cycle , actually processing time - time × idee cycle actual appears= 400 item × 0,8 Min /400,, -ovarall ,, - job schedule job , production

planning and control schedule date issued , relaxation total,credit 0-4 Min work earned ,1080 per× 0,4+43 Min work Min available work of 100 performance ,432 Min ,, 432/432 days of work = 90 out ,100 performance,Orla ,% is over all relaxation allowance mode rate .. ---------- B. Planned down time per day ,down time accounted for inhere proceed,---------- a.manning meeting +29 minute loading time per day. A-B + 460 minute ,D ,stoppage loss per day ,break down,20 minute stop, 30 minute, adjustment -20 minute= 60 minute ,operating time per day -C-D= 400 minute ,G : output per day + 400 item file 42-Duty industrial trade college and industrial , - explanation ista project back log computer student make . -document wallet project office , appointment documents access post , -docuy wallet registration form appointment office , register documents emplomy, information recruitment documents Wallpaper wallet information,database stationery documents wallet ,arch office ,office size mass . - docuy wallet bank account ATM printer ,record book customer revie ,record registry I'd number system , documents wallet Portofilio job career , - database emploie system entry exhib , - emploie record trait job qualifications graduation training post advertised, - I'd register for customer entry databy job post sale reward , programme logic control custy logiy system I'd programmation language database .. - print I'd frame work student ,print I'd student information ,print I'd ,job duty post ,print task rosta ,price over time print labour .. -explanation: to -electronics digital analogic circuit: input a,b gate yes = a.B -storage : potentiometer coefficient resulted and reducing voltage integration by factor (6/12(initial ,x= 6/12 chart capacitor input , output and gate Inverter integral circuit dx/St,,6/4 ,13,, Sum,integer,summat,difference,RLC L.di/DT(R,,+2/c , integral.. -construction PC architecture design development: input unit yes mouse optical keyboard yes , card red,control unity memory RAM ,ROM yes output ,CRT didn't,CPU yes ,room ,yes I/o,year vertical ,8 bit 69 but ,64×#=655336, -memkry systt. -sequencw +3 yes ,0,25 yes ,a+b ,A,B rim , - row yes data ,yes gate output gate , transistor bibpolaire logic diagram ,static RAM ,select ,supplies logic , - booleen algorithm program read ,yes memory register , printer charge plate ,electrosty digital input ,character ,source ,Lazer mirror ,module ,ribbon tape supply. - data memory time yes, -128 sector memoire ,564 bit sector, input output devices microcomputer converter serial data , parallel decoding microspacev,ram 16×16 bineray yes -disc label plastic with write ed inde hold, - sectaire track ,2,255 but logic process read digital step motor, -ns ram yes ,ram yes ,ROM yes ,CPU semie conductor yes ,hard dic driver yes ,external yes flopy disc ,data 150 km to 12m,typical machine -3 bit /5bit/ secret,000A,/AAA@/ load AC ,oo#B/BBB - 00/ load output /001,001/ ---------- -pc specifications format : Intel core 7 , external 975@,3,3ghz ,Intel ,DX58SO motherboard ,6GB,g skill trident DDR-200 channel gaineard ,GTx580 sponsored by vertex ,wD 320 GB ,data iu hard drive ,Intel core ,i7870 ,Gigabyte ,P55-UD6 ,LG flatro ,a essential up grade components AMD,procedure,chip choice the starting dusk x 2550BEb, CPU ,,X4 , 646 upward faster closely processor direct conflict shoe improvement load processor specific benchmark 3 d tendered video encoder x 264 ,, - graphic upgrade ,new little graphic card up date gaming phenomenon power × 2550 choice graphic card filled card up grade ,sub R1,500 udger choice HD 5770bigger to jumping performance Dx ,10 gaming word in conflict , - platform up grade ,CPU u grade path for LGA ,775 socket mother PC 3Ghz,core ,3500 CPU ,4 GB of DDR,ram direct ,x9 tessellation performance heaven ,,2,5 / frame per second higher better ,base systeme with sapphire,HD 550/#7 - upgrade to HD 6959 -ditect ,x 9 gaming perfot.. -one the card edge graphic tracker #gb , sapphire 5850

Xtreme ,retailing R2000 ,price complain 6 pin power connector which PSU hard physical driver installed benchmark away result disappointed ,3 marks improvement word conflict did manage ,lost planet frame wallet being ,R2000 ligth completed reliable, - battery ,g ram ,slot ,#gb,systy memory sticks R150 ,ram benchmark -upgrading memory and processor GB ,test window ,CPU the HD , -weigth components for the perfect budgy building , perfect machine Mother board F#A75-M-R1.100, processor A8-3859-R1,300,, -ram ,corsair ,4 GB,,:1600mhz-R1000 -graphic ,xFx random:HD6670-R1000, -storage : 750 GB - R 619, opacity ,re R200,PSU corsair ,430w ,R470, chassis : cm elite 343/, total :R5,369 ------- Build test installation CPU Vital - compot case layer CPU guard lockdown,add cooler and fan fixing bracket underneath ,screw holes fitting connect mbod,fit the ram : open the catch snai lock. Motheboymemory Chanel ,# and 3 operator, Hook connect ,2+4 pin connector to mobo ,the 8 pin EPs cable whichever,. - test the company power that sucker uonturning , screwdriver,striking the balance corsair ,4 GB ,,1,600 MHz ,DDR3 ,liani ram share system,CPU gaming rate ,2,34 MHz ,and 1,600mhz case , - Pre the case bit ,atz mounting screws install the PSU ,bottoy cable module drop in mother remove CPU from mobo CPU - test it still works connect cable case fab ,tech analysis: 2560×1600 screen Gami surplus frame ,R14,09 flashi ,CPU rendering performance. - cindbonh ,R#1, Test ... 44.Explanation:Technologie compagny: Teasing compagny , requirements market technologie solutions customer product security surveillance network point , - mission : provide technology added value business provide quality products , - valeur accountability ,,. - LCD monitor screen size ,22,5" , 6 viewable image size : 546,86 mm display area : 476.H,,,268,2,v).. mm brightness , typical : 300 CD/mm, contrast ,ratio (typical) 600000:1(DCR) response time (typically) 5 ms , viewing angles 170/169,max ,, - resolution : 2920×1080@ ,60hz -HDCP compatible ,yes ,input signal : analogy ,RGB ,,and user control menu entry image ration source up ,consumption power ,on < 49 standard < ,wall mounted ,visa 100 mm , mechanical function tilt ,5-29 - special features : touch key USB , - type Gori - 335 case type ,ATx Min ,case motherboard : micro ATX , external up (up to 13"×9,7),(p4ready) - power supply: 400w Culp ,P/s with 22cm fan (20+4 pin socket ,775 ready,.,,5,25" drive bays : ,3,3,5" drive hidden , expansion slots: 7,I/O interfy USB × 3 mic ,1 spk ×2 cooling fans front ,80mm,×2,rear 80 mm×1, dimensions,(D×w×H): 410×182×425mm,M/t(cuft):1,73. - print mount USB audio high green LCD fan external ,= 4,5,25" and ,3×3,5" internal driver bays ,4× 3,5" HD ,system board ATX form facty ,13"×20,5 expansion slots standard ATX material steel , - dimensions: 52,25×20×45 cm - raid max modular cabling system durable , titanium mirror grade block wraps mesh cable to mention ,20 toal power connector for computer ,type ,ATX ,12 EPs ,22v maximum ,power ,fan ,135 m blue led ,PFC ,main connector , - rails PCI e connector ,2×6 pin ,,1×6+12 ,pin modular cabling support yes , energy efficiency ,up to 80 % ,over voltage , - network cable . 5 cabling : 500m,solid , 24 AWG,,0,5 mm ,pair ,grey ,305 m flex or solids ,to ,24 AWG,,05mm ,pair ,,cat 6 cable ,305 flex or solids uti,24 AWG ,0,57 mm ,4 pair Gray .. - cable tester digital tester ,cat 5. - toolkit ,j-059 long nose pliers (159,mm) by micro cutting pliers ,by ,339 cable blade trividr hyp ,5022 wire stripper , by 567 telephonic plier ,8 p8 ,/-45 punch down tape,2,mm knife , 539 soldering iron ,39 w cable tester tweezers ,125 mm ,crysty, tester , tweezers 225 mm , crystal, screwdriver,+- module plug RJ ,- 45 / 7 PC , PC plastt box ,315× 255×55mm ,crimping ,tool ,Rachel type dual crimping ,punch down tools ,walls boxry cat singltpart,45 key Stine jack , surface ,car 5 double ,RJ 45 jack ,carb , - connector ,boot sleever ,RJ45 cat micron connector , standard cable make female ,15 pin VGA,extenst

available ,in 2,0 m ,,3.0,,m,5 / male 25 pin,, -1000VA/2000VA,rack mount ups, - patch panel 24 port it cat ,5 a panel ,w,t back ,bar ,48 port cat ,5 panel ,, - battery voltage ,24 VDC recharge ,8 hours to ,90% charger input voltage ,2# vac ,, - or 220VA,, output,wave from pseudo,wave protection outshort city overload protection with current limiting protection ,659 VA line interactive ups ,auto restart recover , provide ovrlot protection size ligth,b microprost control ,proviy modem phone ,line surge protector optit , equipment input ,voltage , building DC start functionalite enable ups ,input commercial power range ,145 vac ,280vac,avr range ,265 vac , frequency ,59 ,z #0% ,, output commercial power, sine shared frequence AVR voltage , 229vac ,auto sensing transfered ,b gross weight ,6,2 ,size mm,D×w×H,,,, 260×96×135.. - data manufacture data security , securite technologie PC , undertaking ,self finger printing , maximum b,test winner , antivirus program,,engine ,anti spyware,antipising, systeme tuning, firewall,internet ,award technologie,double scan outbreak shield , integration block,file archive ,formal ,heurisy detectt of virus ,client security , manager server ,agent notbooj server memory ,, - - Serie projector ,3 projection sysy ,3,LCD ,panel,2 lense projects , system ,resoloi was resolution.. _____& ,- adabase ,storage data, association, emploie..file edit mask array , more, systeme, session systeme, system data. Area program ,nucleus ,buffer pool / ,I/o General,file control block field data space command is added , database, Empl modification,leave ,,name ,title ,edit---------- -Triggered: gitlab,/ GitHub /azure Issue test .. -Triggered electronic elektor technologie - Circuit microcontrol ,, -Gitlab ,fail running Issue kananga ,, Engineering tshingombe Project ,commited contributing ,code source ... tshingombe fiston Sep 16, 2024, 9:29 PM (5 days ago) to tshigombekb, me Explanation: asssessment task management system information Back log isita : orientation police career Pratical Platform software engineer,policy data right met career ,detective career electronics engineering,detective met Tableaux design analyse investigation research police forensic digital print report , intelligence felonies vector design source analyse report evidence - ID submission: 22255 Your :tableau blue print assessment results thank ,completing blue print assessment:: Find everything building action plan get started tableau kit collection resource whitin organisation ,creating data culture happen by flipping a switch professional: - agility deployment monitor maintence typically,it led effort understand board technical requirements. - capabilities agility ,low high . - recommendations to building your agility capabilities,recommattiin to building server , understand hardware, network, database , application is first step in planning server installation. Review tableaux deployment section , completed the enterprise architecture in the the tableaux blueprt planner . - leverage installation can tableaux server implementation to deploy authenty and details, configuration. - manage tableau licensed: license be manage accordt softt license process allocating ,use changing tableaux analyi skill in trade , reclaiming available tableau licensed . - reviy tableaux license level for the company. - deployed client software desktop prep builders,if virtual desktop determine want to manage license. - monitor tableau server process status server process monitoring back group job runseever ,job include extra data slots admnise process fail so corrective action can be taken ,, - configuration critical information platform outage take immediate. 2 - configuy notification system alert and faillure process state drive space constraints instat. - define a process how admnistration will response alerge triggered issue ,, - reviews performance thresholds Claude understand systeme proactive admnistration view. - monitor license utilisation administration monitor usage answer using if you need , - review

admnistration view for monitoring. - completed loadtrst capacity planning load testing understand data work load usage capacity planning , - performance database maintence free space review database maintence.. Installation add extension on tableaux. ---------- -tshingombe Tshitadi - Dev Engineering south africa traiblazet profile : communauty .sale force : Rank 115 badge | 22,125 point |7trails - earn ,6,875 more point reach maintence - career mode , certificate - network security planning, application ,security basic , network care ,security ,cyber security threat and three ---------- Work book : tshingombe , executive, summary Pipe : value , discovery , negotiation,prose , qualifition,, - topics learn objective take stock of your building energy use stationnnary assets data for key field ,few calculation . -refrigerant emissions factor : global warming (GwO) Coolin create record . Auto calculated , emissions in CO2 ,scope corresponding ,entered , -:sum explored key information energy record for a stationary asset emissions ,Miami stationnnary asset envirt,fuel const details NTO headquarters Miami , monthly electricity bill ,electricity 1000kwh ,NTO diesel 1000 litre NTO headquarters ,W1 refresh bilk ,10kg ,calculation of electricity related emissions,the unite state ,us .. C02o emisst rate for location based emissions factor = 396,78 g/kWh Location - based coal -miz percentage ,20% Location based gas mix, 47% Location based nuclear. , 11% .. - scope ,2 location - base emissions (tc02)= electricity consumption (in kW) - emissions factor (g/kW) ,/ 10^6(tC02, convection factor ,100*396 .78 / 100000000= 0,3968t ,c02 _____ - information is calculate ,base grid mix - location based electricity from coal (kWh) 29% of 100kwh= 200kwh. - location based gaz 47%,10000=470kwh - grid mix stationary càlcul,12% of 10000kwh = 11000 - Simi core reference fuel factor record warning potential GwO of CH4:28,GEO of N2I=265,,CH4 emissions factor ,co 2 emissions factor ,C02

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emissions factor ,N2I.. - diesel : 15 kWh ,, 12,45 tones / MWh,, Consumption of diesel (1000litre is first converted to is kWh , calorific value ,15 kW/ K,, - total fuel consumption = 1500kwh (1000×15) = 12,45 × 15000/1000)=186,5 Calculate refrigerant emissions are calculate fuel type is refrigeration sulfure Hexa fluoride (sf6)- IPCC ,,AR ,2007 refrigerator emissions factor record specific global warming. - scope , emissions (tc2e)= GwO)=Gwp×fuel . Green house gas emissions result on stationery asset enert. - Salesforce helo create a stationed asset environmental source record. - Map, stationnnary asset environmental record type . - create an electricity emissions factor record - create an electricity efactor record ,other emissions factor set record .. - Grid mix information : comparison data Quality metrics ,, - eisten case case predictive intellence Consol , Zero claud calculate ,daily energy consumption ,F gaos ---------- ---------- Action user tableau cloud . Wath is action specify user taking this site user name ,wath action user taking , Line x coordination -2 to 150;,, Access interactive action ,,0,50,1000 - published download action ,, subscription b.. - item name ,action :. opportunity tshingombe pipe ,use data source . -home ,,access view -engineering tsht : ---- publish workbook Executive ,summary ---- access view - pipeline analyse ,access view - login ,access view , published workbook published data source ,user data ---------- ------- - metropolitan: met request intellectuel property ,IP license ,date 03 July ,2024,time ,this form has been sent to metropolice police via online home report service<MIP-332-24-0100&00 Detailed ,title ,, ---------- Indicator ,saps Protection VIP ,detective manager syst Infor ,,. ph ,base ,acide ,, concentration solutions ---------- Microsoft form : (HTTPS form office .com page N diplomat award certificate national framework :---------- Response overview ,active : Response ,average score,average time time. - response submitted choice , questions,number ,option ,option 2, Level system ,1,6 5,0 average rating.. -diploma award certificate national framework qualifition design engineering studies ,dhet labour ,. - skill development learn --http// form.con / page/ design page ,v2 ,ASPx,origin = neo portal ,,30 PG Claim your free Microsoft Certification exam from the Microsoft Learn AI Skills Challenge Inbox Microsoft Thu, Apr 25, 11:30 PM to me View in browser Congratulations! You can now claim the free Microsoft Certification exam you earned from successfully completing your Microsoft Learn AI Skills Challenge. Use the voucher you earned and schedule your Microsoft Certification exam before it expires. Voucher code: MSPR97002022 Expiration date: 6/24/2024 12:00:00 AM Schedule your exam now You can only claim one offer per person, regardless of the number of challenges you complete. This exam offer is exam-specific and only redeemable for select Microsoft exams. Once your exam is scheduled, keep preparing by checking out certification resources and additional content related to your journey. Have questions? See the official rules for more details and find answers in the challenge FAQs. Privacy Statement Microsoft Corporation, One Microsoft Way, Redmond, WA 98052 USA Challenge Collection AI Skills Challenge: Build next generation apps with Azure OpenAI In this challenge, you will learn how to build Azure AI solutions, rich search experiences, and generative AI apps that combine large language models with enterprise data. You will work with AI Search and AI Document Intelligence to bring these solutions to life within Copilot Studio. • 19 hr 39 min • 27 Modules Official collection by Microsoft Created by 47% Completed, Get started with Azure OpenAI Service, Build natural language solutions with Azure OpenAI Service, Apply prompt engineering with Azure OpenAI Service Generate code with Azure OpenAI Service, Generate images with Azure OpenAI Service Implement Retrieval Augmented Generation (RAG) with Azure OpenAI

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and university work base experimental univesal faculty memorendum # Starter pipeline # Start with a minimal pipeline that you can customize to build and deploy your code. # Add steps that build, run tests, deploy, and more: # https://aka.ms/yaml trigger: - main pool: vmImage: ubuntu-latest steps: - script: echo Hello, world! displayName: 'Run a one-line script' - script: | echo Add other tasks to build, test, and deploy your project. echo See https://aka.ms/yaml displayName: 'Run a multi-line script' #20241013.1 • Set up CI with Azure Pipelines Claim your free Microsoft Certification exam from the Microsoft SummaryCode Coverage Triggered by Tshingombe TshitadiView 2 changes Repository and version Claim your free Microsoft Certification exam from the Microsoft main83bb7532 Time started and elapsed Just now - Related 0 work items0 artifacts Tests and coverage Get started Jobs to me Workbased On Tue, 15 Oct 2024, 21:02 tshingombe fiston, wrote: Job Microsoft :career recruitment and training path .record transcription - senior software engineer up to 100% work from home , -digital experiemental management,principal engineering,manager,,senior business planned analizing, senior security technical ,applier security technical ,,applied scienti,web security, research ,student . Hard work engineering,mechanical engineering,electrical engineering Firm engineering Data : posted ,,job. Number ,job site ,travel 0-25 . Overview: artifice : intelligence Microsoft project build a platform based language ,llms copilot clean web technologies trend ,. requirements, bachelor's degree computer science ,java script Luton technician experience database azure Google , responsibility work the delivery high quality service power Al search stability reliability participate in design review development of clean well documented team member plan and execute .. On Wed, 09 Oct 2024, 20:07 tshingombe fiston, wrote: - Microsoft certification close Pearson instituts Graduate institute high Education. -Department : DHET high act No,101 of 1997 ,as private.reg high Education reg Certificate No:2004/HE7/004 -accreditation qualities (HEQC),(CHE. Record transcription academic , ---------- -bakc log ,Sita -Ref saqa . -pearson instituts/St peace college instituts, Africa police instituts , Intec institute, saqa foreigners instituts ---------- -Qualification|minimum admin req---------- - foundation| national NSC certificate ---------- Programme| diploma ordegre - bachelor. | International school. Degree |living certificate,accompani | Saqa certificate | national senior NSC NQF | Exemption certificate usaf ---------- Honours. | A recognised under grad Degree | degree module level ---------- Point institute Pearson NSC%. |90-100%|80-89%|70-79%|60-69% |50-59%||40-49|30-39|---------- Ncv%. | Nated%| Ucpd%| ---------- Faculty humanities :/ Bachelor of arts , Saqa I'd : 62761|NQF level: career opportunities child care communication humanity resource management marketing research , public relations research teaching writing -nated : educare : subject record transcription, personal training facilitator assessor saqa Ncv abet NC's matric technical record : Lecture - ---------- -bachelor of arty in graphics design saqa ,ID : 99332 ,NQF level : career opportunities advertising branding design ,3 D modelling animation broadcasting copy writing desktop publishing layour and illustrations entrepreneurship web design. -Nated : drawing engineering,PC business record ---------- Bachelor of arts in journalism saqa I'd : 488832 NQF : level 7 : career opportunities communication editorial work for magazine communication editorial work and news papers journalism , - presenting television social media research . Education actually

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5:47:42 PM Billing Info tshingombe fiston rockview 103 / yeohvill ,jhb percy street 20 jhb, Gauteng, 1030 South Africa T: 0725298946 Payment Method Bank Transfer / Wire Transfer Direct payments to be paid into: SABS Commercial SOC Ltd, ABSA Brooklyn 40-5322-5013 Branch No: 632-005 Items Qty Price ALABFULLTERM SKU: ALABFULLTERM A-Lab Application ID 14 1 R120,000.00 Subtotal R120,000.00 Grand Total (Excl.Tax) R120,000.00 VAT (@15%) R0.00 Grand Total (Incl.Tax) R120,000.00 Thank you, SABS EMC Department! DISCLAIMER:This electronic communication is sent from the SABS Group of Companies and complies with the communication requirements of the Companies ACT. For further information please visit http://www.sabs.co.za/Terms/index.asp Disclaimer The information contained in this communication from the sender is confidential. It is intended solely for use by the recipient and others authorized to receive it. If you are not the recipient, you are hereby notified that any disclosure, copying, distribution or taking action in relation of the contents of this information is strictly prohibited and may be unlawful. This email has been scanned for viruses and malware, and may have been automatically archived by Mimecast Ltd, an in IEC Special offer with IEC 62368-1:2023 Academy Masterclass. QUO-004536 Inbox IEC Sales Department Fri, Sep 20, 1:07 PM (21 hours ago) to me Dear Sir, Thank you for your quotation request. Following your registration to the IEC 62368-1:2023 Academy Masterclass, you will find attached our special offer for the purchase of IEC 62368-1:2023 RLV. Quote Nr. QUO-004536 totalling Swiss Francs CHF 578.40. This quote remains valid for three months only, after which it will automatically be deleted. Please note that prices in EUR and USD are given for information purposes only and as per today's exchange rate. You may proceed to the payment online through the following payment link. We remain available shall you have any questions. Best regards, IEC Sales Department T +41 22 919 0211 IEC – International Electrotechnical Commission 3 rue de Varembé, PO Box 131 CH-1211 Geneva 20, Switzerland www.iec.ch Re: Ticket #ZPQDJ: PC format saling magazine Inbox TSHINGOMBEKB TSHITADI Fri, Sep 20, 2:47 PM (20 hours ago) to 6236161+ZPQDJ, me On Mon, 26 Sep 2022, 14:23 , wrote: Your ticket is now solved! PC format saling magazine Tom Mon, 09/26/22 2:23 pm Hi Fiston, Greetings from Magzter! Please share your query in detail so we could assist you better. Thank you. fiston tshingombe Sun, 09/25/22 5:58 pm Message: PC format electronics Re: Magnum enquiry Inbox TSHINGOMBEKB TSHITADI Fri, Sep 20, 2:47 PM (20 hours ago) to Gail, me On Mon, 26 Sep 2022, 08:17 Gail Osborne, wrote: Hi Tshingombe, Thank you for communicating with Magnum Magazine. Please clarify what cost you are looking for so that I can provide you with a quote: 1. A subscription to Magnum Magazine - let me know your street address so I can find out if you can receive hand delivery 2. A back issue of Magnum Magazine - let me know which edition/s you need so I can check on stock 3. A copy of the book "The Lighter Side of Hunting & Shooting" - let me know the name of your nearest Postnet branch 4. A copy of the "Magnum Tactical Guide" - let me know the name of your nearest Postnet branch Thank you. Kind regards, Gail Osborne Senior Sub-Editor Magnum Magazine PO Box 35204, Northway, 4065, KwaZulu-Natal, South Africa Cell 084-432-1306 Fax 086-520-3711 www.manmagnum.com Your opinion matters: Please complete the evaluation for the course: Maximize Profitability and Operations Efficiency 2/3 Inbox noreply-MyLearningLink@learning.se.com Fri, Sep 20, 3:15 PM (19 hours ago) to me NB: If you have already completed the evaluation or rated this course, please disregard this email Dear Tshingombe, Congratulations on completing the training Maximize Profitability and Operations Efficiency 2/3! Continue your development journey by putting into action what you learnt: did

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statement for Xtra Savings card on our end. Please contact Xtra Sabvings Support on the below number. • Xtra Savings Support: 0800 33 33 85 Best, Thelma 1331500:961486 TSHINGOMBEKB TSHITADI Tue, Oct 18, 5:20 PM (5 days ago) to MMA Yes, I confirm. On Tue, 18 Oct at 1:34 PM , TSHINGOMBEKB TSHITADI wrote: I m asking if can have letter of statement for that account number card confirm saling for that saving account to confirm that balance the saling that grocery or it will be give tendered statement cashback for saling or pay back returned savings account for the accounts . On Tue, 18 Oct 2022, 13:25 TSHINGOMBEKB TSHITADI, wrote: Thank you for the clarification. On Tue, 18 Oct 2022, 11:15 MMA Support, wrote: Hi TSHINGOMBEKB TSHITADI, Please note the amount showing on your slip is to show how much you have saved on goods. This amount cannot be used to buy anything. It is just to show that you have been saving on your groceries. Best, Thelma On Mon, 17 Oct at 8:24 PM , TSHINGOMBEKB TSHITADI wrote: Hello claim extra savings money. 9710085084520751 Amount deposited money for gift receipt cash back magazine resend comments checkers Disclaimer: https://www.shopriteholdings.co.za/email-disclaimer.html Disclaimer: https://www.shopriteholdings.co.za/email-disclaimer.html Corporate Gift Cards | Website Enquiry Inbox TSHINGOMBEKB TSHITADI Oct 18, 2022, 1:58 PM (5 days ago) to giftcards Hi there, I'd like to enquire about your corporate gift cards. Below is my personal information: Name and surname: tshingombe Tshitadi Contact number:0725298946# Email address Amount of gift cards required: @100000rand to 1000rand Mart Marie Van Antwerpen Oct 18, 2022, 2:52 PM (5 days ago) to me Good day I hope you are doing well Please find attached the policies and procedures which should explain the bulk gift card process. This document also indicates the discount rates. If you are

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Placement - Associate End User Computing Engineer - Technology - 2025/2026 - Counter Terrorism Policing HQ Met Recruitment Team 10:20 AM (1 hour ago) Vacancy: 17823 - SQL Server Database Administrator - Counter Terrorism Policing HQ Met Recruitment Team 10:25 AM (1 hour ago) Vacancy: 17937 - Student Placement - Project / Research Assistant - Data & Analysis - 2025/2026 -Counter Terrorism Policing HQ Met Recruitment Team 10:25 AM (1 hour ago) Vacancy: 18030- Senior MetLaw Officer Met Recruitment Team 10:35 AM (50 minutes ago) Vacancy: 17980 - Police prosecutor Met Recruitment Team 10:35 AM (50 minutes ago) Vacancy: 17752 - Student Placement - Media and Communication Administrator 2025/2026 Met Recruitment Team 10:35 AM (50 minutes ago) Vacancy: 16279 - Experienced Intelligence Analyst Met Recruitment Team 10:40 AM (45 minutes ago) Vacancy: 17949 - Student Placement - Business Change Assistant - Change - 2025/2026 - Counter Terrorism Policing HQ Met Recruitment Team 10:40 AM (45 minutes ago) Vacancy: 17680 - Student Placement - Forensic Business Assistant 2025/2026 Met Recruitment Team 10:45 AM (40 minutes ago) to me Vacancy: 17959 - Student Placement - Communications Assistant - 2025/2026 - Communications - Counter Terrorism Policing HQ Met Recruitment Team 10:55 AM (30 minutes ago) Vacancy: 17853 - Enquiry Officer Met Recruitment Team 10:55 AM (31 minutes ago) to me Vacancy: 17830 - Programme Management Office Administrator Met Recruitment Team 10:55 AM (30 minutes ago) to me Vacancy: 16747 - 202402 - MPS Return Scheme Retired Officers Candidate added to Talent Bank Inbox Met Recruitment Team 9:35 AM (1 hour ago) to me Dear tshingombe, Thank you for registering to speak with the Outreach team. A member of the team will contact you shortly by your preferred method. If you no longer wish to speak to a member of the team, please click here to withdraw from our contact list. Many thanks, The Outreach Team Phone: 01633 632500 Email: TalkToUs@met.police.uk Outreach Live chat link: https://uk.meetandengage.com/al2rpqdab Your recent submission Inbox no-reply@service.police.uk 9:15 AM (2 hours ago) to me Thank you for completing the form, your reference is: MIP-482-24-0100-000. --- We understand how distressing being affected by crime or anti-social behaviour can be and we are committed to bringing offenders to justice and ensuring that victims of crime receive the support they need from us and from others. We have lots of crime prevention advice which you may also find useful. Consider our environment - please do not print this email unless absolutely necessary. NOTICE - This email and any attachments may be confidential, subject to copyright and/or legal privilege and are intended solely for the use of the intended recipient. If you have received this email in error, please notify the sender and delete it from your system. To avoid incurring legal liabilities, you must not distribute or copy the information in this email without the permission of the sender. MPS communication systems are monitored to the extent permitted by law. Consequently, any email and/or attachments may be read by monitoring staff. Only specified personnel are authorised to conclude any binding agreement on behalf of the MPS by email. The MPS accepts no responsibility for unauthorised agreements reached with other employees or agents. The security of this email and any attachments cannot be guaranteed. Email messages are routinely scanned but malicious software infection and corruption of content can still occur during transmission over the Internet. Any views or opinions expressed in this communication are solely those of the author and do not necessarily represent those of the Metropolitan Police Service (MPS). Find us at: Facebook: Facebook.com/metpoliceuk Twitter: @metpoliceuk no-reply@service.police.uk 9:22 AM (2 hours ago) to me Thank you for completing the form, your

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Software Engineer II (Job number:1755381) position at Microsoft! We're glad you're interested in a career at Microsoft and we're here to help you find a perfect fit. You may not receive feedback from us on your application directly, but please know that it’s being evaluated, and you’ll hear from us as soon as the review process is complete. If you’re selected for an interview, you’ll be notified by someone on the recruiting team. You can view your application status updates through your Action Center. If you see the job moved to an Archived state, that means the position is either no longer open, you withdrew from consideration, or you were not selected for the role. You may notice that we move your application from one role to another. This may happen a few times and is a normal part of our recruiting process. So, if you see the job you applied to in an Archived state, and a new job listed as Active, please know that this is normal and does not negatively impact your candidacy in any way. How’s your profile? A key part of the review process is evaluating your profile in relation to the job requirements, so please make sure your profile is accurate and extensive – it’s our first step in getting to know you! You can build your profile anyway you’d like – you can import it from LinkedIn, manually update it, or import/attach a resume. The most important thing is that your profile tells your story! We encourage you to check back frequently and continue to look for opportunities that match your interests, as new jobs are being posted regularly. Thank you, Microsoft Recruiting This mail is sent from an unmonitored mailbox. Please do not reply. Microsoft respects your privacy. To learn more, please read our Microsoft Data Privacy Notice.
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these emails from this company in the future, please go to: https://ms.icims.com/icims2/?r=11B617365170&contactId=116124102 © Microsoft Corporation; One Microsoft Way; Redmond, WA 98052; USA Microsoft Recruiting 6:57 AM (4 hours ago) Hi, Fiston Tshingombe teodor, Thank you for applying to the Technology Specialist - Modern Work (Job number:1771873) position at Microsoft! We're glad you're in Microsoft Recruiting 7:02 AM (4 hours ago) Hi, Fiston Tshingombe teodor, Thank you for applying to the Principal Software Engineering Manager (Job number:1766765) position at Microsoft! We're glad you're Microsoft Recruiting 7:06 AM (4 hours ago) Hi, Fiston Tshingombe teodor, Thank you for applying to the Senior Applied Scientist (Job number:1762056) position at Microsoft! We're glad you're interested in Microsoft Recruiting 7:13 AM (4 hours ago) Hi, Fiston Tshingombe teodor, Thank you for applying to the Senior Software Development Engineer (Platform Firmware & Drivers) (Job number:1738100) position at Microsoft Recruiting 7:16 AM (4 hours ago) Hi, Fiston Tshingombe teodor, Thank you for applying to the Director of Network Supply Chain (Job number:1771684) position at Microsoft! We're glad you're inter Microsoft Recruiting 7:18 AM (4 hours ago) Hi, Fiston Tshingombe teodor, Thank you for applying to the Senior Director, Cybersecurity Business Strategy Lead (Job number:1770318) position at Microsoft! We Microsoft Recruiting 7:21 AM (4 hours ago) Hi, Fiston Tshingombe teodor, Thank you for applying to the Principal Product Manager (Job number:1736502) position at Microsoft! We're glad you're interested i Microsoft Recruiting 7:26 AM (4 hours ago) Hi, Fiston Tshingombe teodor, Thank you for applying to the Data Center Technician (Job number:1769625) position at Microsoft! We're glad you're interested in a Microsoft Recruiting 7:28 AM (4 hours ago) Hi, Fiston Tshingombe teodor, Thank you for applying to the Software Engineer-Full Stack- Xbox (Job number:1771329) position at Microsoft! We're glad you're int Microsoft Recruiting 7:30 AM (3 hours ago) to me Hi, Fiston Tshingombe teodor, Thank you for applying to the Software Engineer II (Job number:1770175) position at Microsoft! We're glad you're interested in a career at Microsoft and we're here to help you find a perfect fit. You may not receive feedback from us on your application directly, but please know that it’s being evaluated, and you’ll hear from us as soon as the review process is complete. If you’re selected for an interview, you’ll be notified by someone on the recruiting team. You can view your application status updates through your Action Center. If you see the job moved to an Archived state, that means the position is either no longer open, you withdrew from consideration, or you were not selected for the role. You may notice that we move your application from one role to another. This may happen a few times and is a normal part of our recruiting process. So, if you see the job you applied to in an Archived state, and a new job listed as Active, please know that this is normal and does not negatively impact your candidacy in any way. How’s your profile? A key part of the review process is evaluating your profile in relation to the job requirements, so please make sure your profile is accurate and extensive – it’s our first step in getting to know you! You can build your profile anyway you’d like – you can import it from LinkedIn, manually update it, or import/attach a resume. The most important thing is that your profile tells your story! We encourage you to check back frequently and continue to look for opportunities that match your interests, as new jobs are being posted regularly. Thank you, Microsoft Recruiting This mail is sent from an unmonitored mailbox. Please do not reply. Microsoft respects your privacy. To learn more, please read our Microsoft Data Privacy Notice. Your recent job application for (631) Business Analysis Competency Centre Lead - BSTD - 631 Inbox SARB Talent Acquisition Sat, Sep 21, 7:51 AM (1 day ago) to me Hello, tshitadi,

We received your job application for (631) Business Analysis Competency Centre Lead - BSTD - 631. If your profile corresponds to our requirements, a member of our Recruiting team will contact you. If you were requested to provide additional info about your job application, or if you want to manage your profile, go to your candidate self service page. Sincerely, South African Reserve Bank Your recent job application for (642) SHEQ Analyst-RMCD - 642 Inbox SARB Talent Acquisition Sat, Sep 21, 7:48 AM (1 day ago) to me Hello, tshitadi, We received your job application for (642) SHEQ Analyst-RMCD - 642. If your profile corresponds to our requirements, a member of our Recruiting team will contact you. If you were requested to provide additional info about your job application, or if you want to manage your profile, go to your candidate self service page. Sincerely, South African Reserve Bank Recruiting Team Your recent job application for (649) Cloud Engineer - BSTD - 649 Inbox SARB Talent Acquisition Sat, Sep 21, 7:45 AM (1 day ago) to me Hello, tshitadi, We received your job application for (649) Cloud Engineer - BSTD - 649. If your profile corresponds to our requirements, a member of our Recruiting team will contact you. If you were requested to provide additional info about your job application, or if you want to manage your profile, go to your candidate self service page. Your recent job application for (557) End-User Computing Architect - BSTD - 557 Inbox SARB Talent Acquisition Sat, Sep 21, 7:42 AM (1 day ago) to me Hello, tshitadi, We received your job application for (557) End-User Computing Architect - BSTD - 557. If your profile corresponds to our requirements, a member of our Recruiting team will contact you. If you were requested to provide additional info about your job application, or if you want to manage your profile, go to your candidate self service page. Sincerely, South African Reserve Bank Your recent job application for (630) Data Collection Administrator - 630 Inbox SARB Talent Acquisition Thu, Sep 19, 7:08 AM (3 days ago) to me Hello, tshitadi, We received your job application for (630) Data Collection Administrator - 630. If your profile corresponds to our requirements, a member of our Recruiting team will contact you. If you were requested to provide additional info about your job application, or if you want to manage your profile, go to your candidate self service page. Sincerely, Your recent job application for (640) Information Governance Specialist - BSTD - 640 Inbox SARB Talent Acquisition Thu, Sep 19, 7:13 AM (3 days ago) to me Hello, tshitadi, We received your job application for (640) Information Governance Specialist - BSTD - 640. If your profile corresponds to our requirements, a member of our Recruiting team will contact you. If you were requested to provide additional info about your job application, or if you want to manage your profile, go to your candidate self service page. Sincerely, South African Reserve Bank Your recent job application for (635) Reporting Systems Inspector -FinSurv - 635 Inbox SARB Talent Acquisition Thu, Sep 19, 7:06 AM (3 days ago) to me Hello, tshitadi, We received your job application for (635) Reporting Systems Inspector -FinSurv - 635. If your profile corresponds to our requirements, a member of our Recruiting team will contact you. If you were requested to provide additional info about your job application, or if you want to manage your profile, go to your candidate self service page. Sincerely, South African Reserve Bank Your recent job application for (639) Senior Economic Policy Analyst-IERP - 639 Inbox SARB Talent Acquisition Thu, Sep 19, 6:52 AM (3 days ago) to me Hello, tshitadi, We received your job application for (639) Senior Economic Policy Analyst-IERP - 639. If your profile corresponds to our requirements, a member of our Recruiting team will contact you. If you were requested to provide additional info about your job application, or if you want to manage your profile, go to your candidate self service page. Sincerely, South African Reserve Bank Your recent job application for (644) Team

Leader - Food and Beverages - CSD - 644 Inbox SARB Talent Acquisition Thu, Sep 19, 6:49 AM (3 days ago) to me Hello, tshitadi, We received your job application for (644) Team Leader - Food and Beverages - CSD- 644. If your profile corresponds to our requirements, a member of our Recruiting team will contact you. If you were requested to provide additional info about your job application, or if you want to manage your profile, go to your candidate self service page. Sincerely, South African Reserve Bank Your recent job application for (643) Associate Trade Settlement Officer – Foreign Markets - FMD -643 Inbox SARB Talent Acquisition Thu, Sep 19, 6:11 AM (3 days ago) to me Hello, tshitadi, We received your job application for (643) Associate Trade Settlement Officer – Foreign Markets - FMD -643. If your profile corresponds to our requirements, a member of our Recruiting team will contact you. If you were requested to provide additional info about your job application, or if you want to manage your profile, go to your candidate self service page. Sincerely, South African Reserve Bank Recruiting Team Your recent job application for (646) Divisional Head: Security Operations -GSMD - 646 Inbox SARB Talent Acquisition Thu, Sep 19, 6:08 AM (3 days ago) to me Hello, tshitadi, We received your job application for (646) Divisional Head: Security Operations - GSMD - 646. If your profile corresponds to our requirements, a member of our Recruiting team will contact you. If you were requested to provide additional info about your job application, or if you want to manage your profile, go to your candidate self service page. Sincerely, South African Reserve Bank Update on your Job application with SARB Inbox SARB Talent Acquisition Mon, Sep 16, 11:05 AM (6 days ago) to me Dear tshitadi tshingombe, Thank you for your interest in the (616) Contractor-Building Engineer -CTC at the SARB, we regret to inform you that your application was unsuccessful. Regards Thank you for your interest in Microsoft! Inbox Microsoft Recruiting Unsubscribe Thu, Sep 12, 9:26 PM (10 days ago) to me Hi Fiston Tshingombe teodor, Thank you for your interest in a career at Microsoft. Unfortunately, we will not be moving forward with your candidacy for the position of Software Engineer II (Full stack), 1749784 at this time. However, we'd like to encourage you to continue to explore other career opportunities on Microsoft Careers as we continually update openings on a daily basis. We look forward to considering you for other positions at Microsoft! Thank you, Microsoft Recruiting Microsoft respects your privacy. To learn more, please read our Microsoft Data Privacy Notice. This mail is sent from an unmonitored mailbox. Please do not reply. Eskom Careers: Confirmation of Application Inbox sharepoint@eskom.co.za Sun, Sep 1, 1:27 PM to me Dear Tshingombe Tshitadi , Job Reference: EMTOPPMT06 Position: Technical Official PPM Mechanical X2 (Distribution) EAL Midrand Region: South Africa (Gauteng) Industry: Engineering Closing Date: 2024/09/09 Thank you for your interest in a career at Eskom. Your online application was received and will be duly actioned by the Recruitment Practitioner allocated to the position you applied for. Should you not be contacted within 28 days of the closing date of this advertisement, please accept that your application was unsuccessful Please also note that you only have to register and load your Personal History Profile (PHP) once. You may in future apply for vacancies using the PHP provided. Once the PHP has been completed for a particular vacancy, it can be saved and used for future applications. The PHP may be up-dated, when necessary, for future applications Best wishes with your future Kind Regards Recruitment Manager Shared Services (HR) FINANCE DIVISION Disclaimer NB: This Email and its contents are subject to the Eskom Holdings SOC Ltd EMAIL LEGAL NOTICE which can be viewed at https://www.eskom.co.za/about-eskom/email-legal-spam-disclaimer/ sharepoint@eskom.co.za Sun, Sep 1, 1:29 PM Dear Tshingombe Tshitadi ,

Job Reference: EIT X2/GX PrimaryE/MC Position: 1 Learning-Programme-Engineer-in-Training-x-2,-Generation,-Megawatt-Park Region: South sharepoint@eskom.co.za Sun, Sep 1, 1:30 PM Dear Tshingombe Tshitadi , Job Reference: GXMATL- EIT/2024 Position: Learning Programme Engineer in Trainng x17 GX Matla Power Station Region: South Africa (Mpu sharepoint@eskom.co.za Sun, Sep 1, 1:31 PM Dear Tshingombe Tshitadi , Job Reference: 50515483LM Position: Manager Site Outage Execution, Generation, Tutuka Power Station Closing Date: 2024/09/13 sharepoint@eskom.co.za Sun, Sep 1, 1:31 PM Dear Tshingombe Tshitadi , Job Reference: 50813227NLee01 Position: Re Advert Snr Technologist Electrical Engineering Substation x2 (National Transmission Compa sharepoint@eskom.co.za Sun, Sep 1, 1:32 PM Dear Tshingombe Tshitadi , Job Reference: 50813227NLee01 Position: Re Advert Snr Technologist Electrical Engineering Substation x2 (National Transmission Compa sharepoint@eskom.co.za Sun, Sep 1, 1:32 PM Dear Tshingombe Tshitadi , Job Reference: 50861481SN/GX-Koeberg Position: Senior Technician Chemistry x2 (Technical Support and Oils Micro) (Generation) Koeberg sharepoint@eskom.co.za Sun, Sep 1, 1:33 PM Dear Tshingombe Tshitadi , Job Reference: GXMedOMM04 Position: Officer Safety Health Environment X1 Generation Medupi Power Station Region: South Africa (Limpop sharepoint@eskom.co.za Sun, Sep 1, 1:34 PM Dear Tshingombe Tshitadi , Job Reference: Learners OGE Contracts Management Position: Learning Programme Outages x1 - Graduate in Training , Generation, Megawat sharepoint@eskom.co.za Sun, Sep 1, 1:35 PM Position: Learning Programme -Graduate in Training-Quantity Surveyor, Generation, Megawatt Park sharepoint@eskom.co.za Sun, Sep 1, 1:36 PM Dear Tshingombe Tshitadi , Job Reference: Snr Advisor SDL&IPL Position: Senior Advisor Supplier Development, Localisation and Industrialisation x2, Generation, sharepoint@eskom.co.za Sun, Sep 1, 1:37 PM Dear Tshingombe Tshitadi , Job Reference: DurbanvilleFXGIT2025 Position: Graduate-in-Training (Finance) Industry: Other Closing Date: 2024/09/09 sharepoint@eskom.co.za Sun, Sep 1, 1:38 PM Dear Tshingombe Tshitadi , Job Reference: 50828254NLee01 Position: Re Advert Snr Draughtsperson Draughting Electrical Substation Engineering x3 NTCSA MWP Closin sharepoint@eskom.co.za Sun, Sep 1, 1:39 PM Dear Tshingombe Tshitadi , Job Reference: PeakingTITDrakensberg2025 Position: Technician-in-Training x2 (1xC+I and 1+Mech) Region: South Africa (Kwa-Zulu Natal) sharepoint@eskom.co.za Sun, Sep 1, 1:39 PM Dear Tshingombe Tshitadi , Job Reference: GX49002630WK/TUT Position: Snr. Supervisor Tech Instrument x 2 (Generation) Tutuka Power Station Region: South Africa sharepoint@eskom.co.za Sun, Sep 1, 1:40 PM Dear Tshingombe Tshitadi , Job Reference: PeakingLearnersEIT2025 Position: Engineer-in-Training-Control and Instrumentation AND-Auxiliary and Ancillary-(Peaking sharepoint@eskom.co.za Sun, Sep 1, 1:42 PM Dear Tshingombe Tshitadi , Job Reference: GXMedSTR14.1 Position: Re Advert Senior Technician Configuration X1 (Generation) Medupi Power Station Closing Date: 20 sharepoint@eskom.co.za Sun, Sep 1, 1:43 PM Dear Tshingombe Tshitadi , Job Reference: 50817165NQ Position: Engineer Prof Eng Quality of Supply (National Transmission Company South Africa) Newscastle Indus sharepoint@eskom.co.za Sun, Sep 1, 1:45 PM Dear Tshingombe Tshitadi , Position: Learning Programme - Graduate in Training x1, Generation, Megawatt Park Region: South Africa (Gauteng) sharepoint@eskom.co.za Sun, Sep 1, 1:45 PM Dear Tshingombe Tshitadi , Job Reference: Learners OGE Environmental Management Position: Learning-Programme -Graduate-in-Training-x3,-Generation,-1Megawatt-Par sharepoint@eskom.co.za Sun, Sep 1, 1:46 PM Dear Tshingombe Tshitadi , Job Reference: Learners Gx Procurement Position: Learning Programme-Graduate in Training x 3, Generation,

Megawatt Park sharepoint@eskom.co.za Sun, Sep 1, 1:47 PM Dear Tshingombe Tshitadi , Job Reference: Learners OGE Legal Position: Learning Programme-Graduate in Training x 2, Generation, Megawatt Park sharepoint@eskom.co.za Sun, Sep 1, 1:49 PM Dear Tshingombe Tshitadi , Job Reference: 50097836FN Position: Senior Supervisor Technical Projects (National Transmission Company South Africa)Northwest and sharepoint@eskom.co.za Sun, Sep 1, 1:51 PM Dear Tshingombe Tshitadi , Job Reference: 50861459SCM Position: Snr-Advisor-Applications-Support-(Group-IT-DIVISION)-Megawatt-Park Region: South Africa (Gauteng sharepoint@eskom.co.za Sun, Sep 1, 1:51 PM Dear Tshingombe Tshitadi , Job Reference: 001 EIT Position: Learning Programme - Engineer in Training x3 (Generation) Engineering MWP Region: South Africa (Gaut sharepoint@eskom.co.za Sun, Sep 1, 1:53 PM Dear Tshingombe Tshitadi , Job Reference: GXKRL-04 Position: Secretary Secretarial (Gx Kriel Power Station) Region: South Africa (Mpumalanga) sharepoint@eskom.co.za Sun, Sep 1, 1:55 PM Dear Tshingombe Tshitadi , Job Reference: Graduate in Training- Commercial Position: Graduate in Training (Commercial) x1 (Generation) Industry: Human Resources sharepoint@eskom.co.za Sun, Sep 1, 1:58 PM Dear Tshingombe Tshitadi , Job Reference: Graduate in Training- Finance Position: Graduate in Training (Finance) x1 (Generation) sharepoint@eskom.co.za Sun, Sep 1, 1:58 PM Dear Tshingombe Tshitadi , Job Reference: Engineer-in-Training Nuclear Engineering Position: Engineer in Training (Nuclear Engineering) x9-Generation Koeberg NP sharepoint@eskom.co.za Sun, Sep 1, 2:00 PM Dear Tshingombe Tshitadi , Job Reference: Learners Gx OMO/SM Position: Learning Programme - Engineer in Training x2,

10/27/2024, 12:52 PM

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Generation, Megawatt Park Region: South Afr sharepoint@eskom.co.za Sun, Sep 1, 2:01 PM Dear Tshingombe Tshitadi , Job Reference: 505571133PM/01 Position: Re Advert Senior Engineer Prof Electrical Engineering (Project Integration) NTCSA MWP Region: sharepoint@eskom.co.za Sun, Sep 1, 2:02 PM Dear Tshingombe Tshitadi , Job Reference: 50840435MIR Position: Officer Security (National Transmission Company South Africa) Bellville sharepoint@eskom.co.za Sun, Sep 1, 2:04 PM Dear Tshingombe Tshitadi , Job Reference: Gx Arn NN 23/08/24 Position: Officer catering (Generation) Arnot Power Station x1 Region: South Africa (Mpumalanga) In sharepoint@eskom.co.za Sun, Sep 1, 2:05 PM to me Dear Tshingombe Tshitadi , Job Reference: 50842085LRR Position: Re-Advert: Assistant Officer Security Operations Centre (FINANCE DIVISION) Megawatt Park Region: South Africa (Gauteng) Industry: Other Closing Date: 2024/09/06 Thank you for your Application! Inbox Microsoft Recruiting Sun, Sep 1, 8:55 AM Hi, Fiston Tshingombe teodor, Thank you for applying to the Principal Software Engineer – Teams Platform (Job number:1726871) position at Microsoft! We're glad Microsoft Recruiting Sun, Sep 1, 8:58 AM Hi, Fiston Tshingombe teodor, Thank you for applying to the Senior Machine Learning Engineer (Job number:1759775) position at Microsoft! We're glad you're inter Microsoft Recruiting Sun, Sep 1, 9:01 AM Hi, Fiston Tshingombe teodor, Thank you for applying to the Senior Security Technical Program Manager (Job number:1762424) position at Microsoft! We're glad you Microsoft Recruiting Sun, Sep 1, 9:05 AM Hi, Fiston Tshingombe teodor, Thank you for applying to the Data & AI Technical Sales Specialist (Job number:1762311) position at Microsoft! We're glad you're i Microsoft Recruiting Sun, Sep 1, 9:11 AM Hi, Fiston Tshingombe teodor, Thank you for applying to the Software Engineer II (Full stack) (Job number:1749784) position at Microsoft! We're glad you're inte Microsoft Recruiting Sun, Sep 1, 9:13 AM Hi, Fiston Tshingombe teodor, Thank you for applying to the Customer Success Account Manager (Job number:1762683) position at Microsoft! We're glad you're inter Microsoft Recruiting Sun, Sep 1, 9:16 AM Hi, Fiston Tshingombe teodor, Thank you for applying to the Principal Technical Program Manager (Job number:1736977) position at Microsoft! We're glad you're in Microsoft Recruiting Sun, Sep 1, 9:19 AM to me Hi, Fiston Tshingombe teodor, Thank you for applying to the Senior Applied AI Engineer (Job number:1762298) position at Microsoft! We're glad you're interested in a career at Microsoft and we're here to help you find a perfect fit. You may not receive feedback from us on your application directly, but please know that it’s being evaluated, and you’ll hear from us as soon as the review process is complete. If you’re selected for an interview, you’ll be notified by someone on the recruiting team. You can view your application status updates through your Action Center. If you see the job moved to an Archived state, that means the position is either no longer open, you withdrew from consideration, or you were not selected for the role. You may notice that we move your application from one role to another. This may happen a few times and is a normal part of our recruiting process. So, if you see the job you applied to in an Archived state, and a new job listed as Active, please know that this is normal and does not negatively impact your candidacy in any way. How’s your profile? A key part of the review process is evaluating your profile in relation to the job requirements, so please make sure your profile is accurate and extensive – it’s our first step in getting to know you! You can build your profile anyway you’d like – you can import it from LinkedIn, manually update it, or import/attach a resume. The most important thing is that your profile tells your story! We encourage you to check back frequently and continue to look for opportunities that match your interests, as new jobs are being posted regularly. Thank you, Microsoft Recruiting This mail is

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_____ This message was sent to tshingombefiston@gmail.com. If you don't want to receive these emails from this company in the future, please go to: https://ms.icims.com/icims2/?r=11B617365170&contactId=113826735 Your recent job application for Software Engineer FMCD - 34622 Inbox Ford Careers Sun, Sep 1, 8:45 AM to me Hello fiston, Thank you for your interest in joining the Ford Motor Company team. You've taken the first steps by completing your application and sharing your qualifications for the Software Engineer FMCD -34622 position. We will contact you if we think you're a good fit for that position. In the meantime, keep checking www.careers.ford.com for additional opportunities – we'd love to help you find your dream job. Sincerely, The Ford Talent Acquisition Team Your recent job application for Cyber Security ISP and Data Analyst - 34582 Inbox Ford Careers Sun, Sep 1, 8:40 AM to me Hello fiston, Thank you for your interest in joining the Ford Motor Company team. You've taken the first steps by completing your application and sharing your qualifications for the Cyber Security ISP and Data Analyst -34582 position. We will contact you if we think you're a good fit for that position. In the meantime, keep checking www.careers.ford.com for additional opportunities – we'd love to help you find your dream job. Sincerely, The Ford Talent Acquisition Team Your recent job application for Backend Engineer - 34857 Inbox Ford Careers Sun, Sep 1, 8:37 AM to me Hello fiston, Thank you for your interest in joining the Ford Motor Company team. You've taken the first steps by completing your application and sharing your qualifications for the Backend Engineer - 34857 position. We will contact you if we think you're a good fit for that position. In the meantime, keep checking www.careers.ford.com for additional opportunities – we'd love to help you find your dream job. Sincerely, The Ford Talent Acquisition Team Your recent job application for Thermal Systems Integration Engineer, HVAC - 34848 Inbox Ford Careers Sun, Sep 1, 8:35 AM to me Hello fiston, Thank you for your interest in joining the Ford Motor Company team. You've taken the first steps by completing your application and sharing your qualifications for the Thermal Systems Integration Engineer, HVAC - 34848 position. We will contact you if we think you're a good fit for that position. In the meantime, keep checking www.careers.ford.com for additional opportunities – we'd love to help you find your dream job. Sincerely, The Ford Talent Acquisition Team Your recent job application for STA Site Engineer - 34645 Inbox Ford Careers Sun, Sep 1, 8:30 AM to me Hello fiston, Thank you for your interest in joining the Ford Motor Company team. You've taken the first steps by completing your application and sharing your qualifications for the STA Site Engineer - 34645 position. We will contact you if we think you're a good fit for that position. In the meantime, keep checking www.careers.ford.com for additional opportunities – we'd love to help you find your dream job. Sincerely, The Ford Talent Acquisition Team Your recent job application for Propulsion Systems Design Release Engineer - 34464 Inbox Ford Careers Sun, Sep 1, 8:28 AM to me Hello fiston, Thank you for your interest in joining the Ford Motor Company team. You've taken the first steps by completing your application and sharing your qualifications for the Propulsion Systems Design Release Engineer - 34464 position. We will contact you if we think you're a good fit for that position. In the meantime, keep checking www.careers.ford.com for additional opportunities – we'd love to help you find your dream job. Sincerely, The Ford Talent Acquisition Team Your recent job application for HV Battery Build & Test Engineer (Thermal Runaway) - 31563 Inbox Ford Careers Sun, Sep 1, 8:25 AM to me Hello

fiston, Thank you for your interest in joining the Ford Motor Company team. You've taken the first steps by completing your application and sharing your qualifications for the HV Battery Build & Test Engineer (Thermal Runaway) - 31563 position. We will contact you if we think you're a good fit for that position. In the meantime, keep checking www.careers.ford.com for additional opportunities – we'd love to help you find your dream job. Sincerely, The Ford Talent Acquisition Team Your recent job application for Systems Engineering - 32712 Inbox Ford Careers Sun, Sep 1, 8:23 AM to me Hello fiston, Thank you for your interest in joining the Ford Motor Company team. You've taken the first steps by completing your application and sharing your qualifications for the Systems Engineering - 32712 position. We will contact you if we think you're a good fit for that position. In the meantime, keep checking www.careers.ford.com for additional opportunities – we'd love to help you find your dream job. Sincerely, The Ford Talent Acquisition Team Your recent job application for Systems Integration, Electrical Architecture - 32709 Inbox Ford Careers Sun, Sep 1, 8:21 AM to me Hello fiston, Thank you for your interest in joining the Ford Motor Company team. You've taken the first steps by completing your application and sharing your qualifications for the Systems Integration, Electrical Architecture - 32709 position. We will contact you if we think you're a good fit for that position. In the meantime, keep checking www.careers.ford.com for additional opportunities – we'd love to help you find your dream job. Sincerely, The Ford Talent Acquisition Team our recent job application for (602) Bank Analyst-FCSD - 602 Inbox SARB Talent Acquisition Sat, Aug 31, 2:01 PM to me Hello, tshitadi, We received your job application for (602) Bank Analyst-FCSD - 602. If your profile corresponds to our requirements, a member of our Recruiting team will contact you. If you were requested to provide additional info about your job application, or if you want to manage your profile, go to your candidate self service page. Sincerely, South African Reserve Bank Your recent job application for (608) Lead Policy Analyst - 608 Inbox SARB Talent Acquisition Sat, Aug 31, 1:57 PM to me Hello, tshitadi, We received your job application for (608) Lead Policy Analyst -608. If your profile corresponds to our requirements, a member of our Recruiting team will contact you. If you were requested to provide additional info about your job application, or if you want to manage your profile, go to your candidate self service page. Sincerely, South African Reserve Bank Recruiting Team Application acknowledgement Inbox SARS Human Capital and Development Sat, Aug 31, 8:43 AM to me Dear Tshingombe Tshitadi , Job Application: Business Area Lead: Civil Case Select Strategy Reference code: 9833 Receipt of your application for the advertised post is hereby acknowledged. It may take some time to process your application. Regards, SARS Talent Acquisition Team 31 August 2024 SARS Human Capital and Development Sat, Aug 31, 8:45 AM to me Dear Tshingombe Tshitadi , Job Application: Ops Manager: Facilities Management Reference code: 9832 SARS Human Capital and Development Sat, Aug 31, 8:46 AM to me Dear Tshingombe Tshitadi , Job Application: Specialist Developer: Information Technology (Adabas) Reference code: 9799 SARS Human Capital and Development Sat, Aug 31, 8:47 AM to me Dear Tshingombe Tshitadi , Job Application: Specialist: Systems Engineer (Mainframe) Reference code: 9804 SARS Human Capital and Development Sat, Aug 31, 8:48 AM to me Dear Tshingombe Tshitadi , Job Application: Senior Specialist: Database Administration (Adabas) Reference code: 9796 SARS Human Capital and Development Sat, Aug 31, 8:49 AM to me Dear Tshingombe Tshitadi , Job Application: Junior Specialist: Asset Management (Software) Reference code: 9791 Update Regarding Your Application Inbox Eaton TalentHub Fri, Aug 30, 3:47 PM to me Hi Fiston, Thank you for applying for the position of Senior Field Service

Representative – 31188. We appreciate you considering a career at Eaton. After careful review, we have decided to move forward with other candidates who more closely match the current needs for this team and position. We know that messages like this are disappointing, but we really hope you continue to pursue other opportunities at Eaton. Be sure to check out Eaton.com/careers, where you can find all our open jobs and set up a job alert. Thank you for your interest in Eaton and wish you all the best! Eaton Talent Acquisition Team Your recent job application for (605) Financial Stability Department - Finstab - 605 Inbox SARB Talent Acquisition Sat, Aug 31, 1:45 PM to me Hello, tshitadi, We received your job application for (605) Financial Stability Department - Finstab - 605. If your profile corresponds to our requirements, a member of our Recruiting team will contact you. If you were requested to provide additional info about your job application, or if you want to manage your profile, go to your candidate self service page. Sincerely, South African Reserve Bank Recruiting Team Your recent job application for (606) Associate Macroprudential Specialist - Finstab - 606 Inbox SARB Talent Acquisition Sat, Aug 31, 1:49 PM to me Hello, tshitadi, We received your job application for (606) Associate Macroprudential Specialist -Finstab - 606. If your profile corresponds to our requirements, a member of our Recruiting team will contact you. If you were requested to provide additional info about your job application, or if you want to manage your profile, go to your candidate self service page. Sincerely, South African Reserve Bank Recruiting Team Application Unsuccessful Inbox SARS Human Capital and Development Wed, Aug 28, 2:00 PM to me Dear Tshingombe Tshitadi , Thank you for applying for Specialist: Case Selection (Transfer Pricing). After careful consideration we regret to inform you that your application was not successful. We wish you everything of the best in your future applications. Yours Sincerely, SARS Talent Acquisition Team • About Us • Our Network • Skills for Work and Life • Knowledge Resources TVET Forum - Connect With a Global TVET Community TVET Forum SDG and TVET Virtual Conferences About the TVET Forum Terms of Use Help & FAQ Manage Your Account Unsubscribe Contact TVET Forum User profile tshitadi fiston Member since 2023-10-14 5 Postings UNEVOC Centre #3043 h Contact: tshingombefiston@gmail.com User Messages: 2024-09-23 Re: Models of Institutional Effectiveness in VET () 2024-09-23 engineering qualification framework implentation tvet college , rdc and rsa record system engineering n studie () 2024-09-23 engineering qualification framework implentation tvet college , rdc and rsa record system engineering n studie () 2024-09-23 experimental workbase tvet and institut back log dhet ucpd record st peace college and sita and examination irregularity implentation () 2024-09-23 experimental career tvet college institu assessment police guidence back log sita and irregularity level 4,5,3,6 ucpd engineering studie diploma certificate () RE: CMS 221043 YS Online form submission: CNP-53345-24-0100-000 Inbox TPMailbox-CMSCCC@met.pnn.police.uk Mon, Sep 23, 12:23 PM (21 hours ago) to me Good Morning, Thank you for your online submission into the Crime Management Services. The crime reference number is showing in the system as not in existence. Are you the victim? What is the nature of the crime? Do you have a named Officer assigned to the Case? Would you like us to place an update onto the system? Kindest regards, Yvonne - Crime Management Services Should you require us in an emergency, please dial 999. If you wish to speak to the operator regarding a non-emergency, please dial 101. **********PLEASE DO NOT REPLY TO THIS EMAIL. OUR MAILBOX CANNOT RECEIVE EMAILS DIRECTLY FROM MEMBERS OF THE PUBLIC. AS SUCH, SHOULD YOU WISH TO RESPOND TO THIS EMAIL, YOU WILL NEED TO VISIT THE FOLLOWING LINK TO RE-SUBMIT THE REPLY********** https://www.met.police.uk/contact/af/contact-us/ -----

Original Message----- From: no-reply@service.police.uk Sent: 22 September 2024 08:24 To: TP MAILBOX - CMS CCC Subject: CMS 221043 YS Online form submission: CNP-53345-24-0100-000 ********** OFFICIAL - SENSITIVE ********** ----------STEP 1 ---------- First name: fiston ---------- Surname: tshingombe ---------- Date of birth: 10/11/1982 ---------- Email address: tshingombefiston@gmail.com ---------- Telephone number (for international numbers include the country code): +270725298946---------- Postcode: Percy street 1039, Hendrik Potgieter St Johannesburg 1030 ----------Origin: Form ----------
Crime reference number: eg 1234567/17 or 01/00000/24: 2345654/24---------- When did the incident happen?: 02/09/2022 ---------- What is your involvement in this

10/27/2024, 12:52 PM

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case?: High court London transaction victim Edith ,Mrs basem attorney chamber affidavit Portofolio evidence low , complain incidence accident transaction money for claim bank work UK from Canada transaction made in RSA , union waster..Asia bank ---------- Please provide us with your update: 10/09/2024 NOTICE - This email and any attachments are solely for the intended recipient and may be confidential. If you have received this email in error, please notify the sender and delete it from your system. Do not use, copy or disclose the information contained in this email or in any attachment without the permission of the sender. Metropolitan Police Service (MPS) communication systems are monitored to the extent permitted by law and any email and/or attachments may be read by monitoring staff. Only specified personnel are authorised to conclude binding agreements on behalf of the MPS by email and no responsibility is accepted for unauthorised agreements reached with other personnel. While reasonable precautions have been taken to ensure no viruses are present in this email, its security and that of any attachments cannot be guaranteed. Application Update Inbox TalkToUs@met.police.com.uk via tal.net Mon, Sep 23, 4:15 PM (18 hours ago) to me Dear tshingombe Good Afternoon Thank you for getting in touch with the Metropolitan Police regarding career opportunities. We apologise if there has been a delay in responding to you but this is likely to be because of the large amount of interest that the campaign has generated. If you have seen it “change needs you !” We are here to help you with any enquiries or questions that you have about the job or your application form in the hope that you will complete and submit an application but please do let us know if you are no longer interested. In order to make a start of understanding how we can help you we have a few questions that we would appreciate you answering in reply to this email and if replying on another device the email address to use is TalkToUs@met.police.uk. Are you still interested in a career in the Met? What role are you interested in? What is your highest level of academic achievement? Are you currently working towards a qualification? Do you have a GCSE or equivalent in English? Have you attended or are you interested in attending an Insight Event? Is there anything that we can help with to encourage your application? Look forward to hearing from you soon Kind Regards Met Police Candidate Engagement Team. Automated Response Inbox TalkToUs@met.police.uk Mon, Sep 23, 4:25 PM (17 hours ago) to me Thank you for getting in touch to find out more about becoming a Met Police Constable. Due to the high volume of queries, we aim to contact you within 5 working days. We will do our best to reach out to you within your ideal time slot, if provided. Kindest regards, Talk to Us Team NOTICE - This email and any attachments are solely for the intended recipient and may be confidential. If you have received this email in error, please notify the sender and delete it from your system. Do not use, copy or disclose the information contained in this email or in any attachment without the permission of the sender. Metropolitan Police Service (MPS) communication systems are monitored to the extent permitted by law and any email and/or attachments may be read by monitoring staff. Only specified personnel are authorised to conclude binding agreements on behalf of the MPS by email and no responsibility is accepted for unauthorised agreements reached with other personnel. While reasonable precautions have been taken to ensure no viruses are present in this email, its security and that of any attachments cannot be guaranteed. Application Update Inbox Met Recruitment Team 1:05 AM (9 hours ago) to me tshingombe, You’ve started your application form, but haven’t yet finished it. You haven’t got much left to do in this section, and we’d love it if you had five minutes to finish this off. You’ll need to log back

into the system to continue – Application Centre to pick up where you left off. You can review your progress using the navigation menu on the left hand side of the application form screen – a tick means you're done in each section. If you're stuck and need help, please give us a call – our telephone details are below. Please don't worry about asking us for assistance, that's what we're here for! If you're having trouble deciding whether you want to continue or not, please do give us a call – we'll be able to help by talking this through with you. Have a great day! Yours sincerely, Shared Services Connected Ltd – Delivering services in partnership with the Metropolitan Police Service Phone: 01633 632500 Email: Enquiries.PoliceJobs@police.sscl.com Removing Barriers to Officer Accountability Inbox Google Forms 9:49 AM (4 minutes ago) to me Thanks for filling out Removing Barriers to Officer Accountability Here's what was received. Removing Barriers to Officer Accountability Section 1: Attorney Affirmation is MANDATORY if you wish to receive CLE credit. Section 2: Course Evaluation is ENCOURAGED to inform the state of New York on our program. Email * tshingombefiston@gmail.com Section 1: Attorney Affirmation NY CLE Credit for Webinar To obtain New York CLE credit, please complete and sign this form and then submit it to the Policing Project at NYU Law. Your participation must be verified by the provider. Experienced New York attorneys (attorneys who have been admitted to the New York bar for more than two years) may earn CLE credit through nontraditional formats. Newly admitted attorneys (attorneys who have been admitted to the New York Bar for two years or less) should confirm that the format is permissible for the category of credit. New York attorneys should retain a copy of this affirmation. Email * tshingombefiston@gmail.com Format: Webconference Course Code(s) During each session of the conference you will see and/or hear one or more CLE course codes. Please enter the code(s) in the fields below. If you do not enter the correct code(s), you will not be awarded New York CLE credit. If you did not attend the entire conference, you are able to receive partial credit for the individual sessions you attended in their entirety. List all code(s) for September 24, 2024 * 21-CIP-J / FFPSA & Kinship (Part 1),Date & Time Sep 24, 2024 09:00 PM Johannesburg Webinar ID 912 5168 3181,Tue Sep 24, 2024 9pm – 10pm (SAST) Where https://nyu.zoom.us /w/91251683181?tk=9vyym4gehi0cHxdYwYdOOiYbUw2lCZzZ_lKD0ceCABo.DQcAAAAVPwYvbRZjNTdyNEx1S1NaQzljV2s3NlU2SEdRAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA&uuid=WN_3jfCNZddR7iCjsRfhRXPag Who Gabby Bayness 30x30 Initiative: Advancing Women in Policing Chicago Neighborhood Policing Initiative Legislation Litigation Regulating Use of Technology in Policing ReImagining Public Safety SAJE Policing Assessment Our Mission: We Partner With Communities And Police To Promote Public Safety Through Transparency, Equity, and Democratic Engagement. Our work focuses on front-end, or democratic, accountability—meaning the public has a voice in setting transparent, ethical, and effective policing policies and practices before the police or government act. The goal is to achieve public safety in a manner that is equitable, non-discriminatory, and respectful of public values. Broadly speaking, our work is centered around three focus areas: Front-End Voice in Policing: We believe that in a democratic society, the public must have a voice in how it is policed. Regulation of Policing Technology: We believe that there must be transparency and public debate around the adoption of new policing technologies. Reimagining Public Safety: We believe it is time for a national conversation about what public safety means, and how it is best achieved. Explore our focus areas to learn more about our work.*, Name of CLE Provider: New York University School of Law - Policing Project Please confirm the following statements by checking the boxes and typing your

name in the signature field below * ✓ I acknowledge receipt of the course materials for Removing Barriers to Officer Accountability ✓ I certify that I have listened to and/or viewed Removing Barriers to Officers Accountability in its entirety for the sessions for which I've entered codes. Therefore, I request that I be awarded the applicable number of New York CLE credits for this course. Signature * tshingombefiston@gmailcom Date of completion of CLE course (New York attorneys earn CLE credit as of the date they complete a CLE course): * MM 09 / DD 25 / YYYY 2024 Attorney email address to receive CLE certificate (if different from the address above): tshingombekb@gmail.com Section 2: Course Evaluation Course evaluations are optional, but must be offered to all attorneys who participated in today's course. Program Title Thank you for registering for Removing Barriers to Law Enforcement Officer Accountability. You can find information about this webinar below. Removing Barriers to Law Enforcement Officer Accountability Date MM 09 / DD 25 / YYYY 2024 Speaker(s): Removing Barriers to Law Enforcement Officer Accountability Confirmation Inbox Gabby Bayness AttachmentsSep 24, 2024, 8:15 PM (13 hours ago) to me Sep24Tue Removing Barriers to Law Enforcement … View on Google Calendar When Tue Sep 24, 2024 9pm – 10pm (SAST) Where https://nyu.zoom.us /w/91251683181?tk=9vyym4gehi0cHxdYwYdOOiYbUw2lCZzZ_lKD0ceCABo.DQcAAAAVPwYvbRZj NTdyNEx1S1NaQzljV2s3NlU2SEdRAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA& uuid=WN_3jfCNZddR7iCjsRfhRXPag Who Gabby Bayness* Agenda Tue Sep 24, 2024 No earlier events 9pm Removing Barriers to Law Enforcement … No later events Hi Tshingombe tshitadi, Thank you for registering for Removing Barriers to Law Enforcement Officer Accountability. You can find information about this webinar below. Removing Barriers to Law Enforcement Officer Accountability Date & Time Sep 24, 2024 09:00 PM Johannesburg Webinar ID 912 5168 3181 Add to: Google Calendar Outlook Calendar(.ICS) Yahoo Calendar To edit or cancel your registration details, click here. You can cancel your registration before Sep 24, 2024 09:00 PM. Please submit any questions to: gib7728@nyu.edu Thank you! WAYS TO JOIN THIS WEBINAR Join from PC, Mac, iPad, or Android Join Webinar If the button above does not work, paste this into your browser:
https://nyu.zoom.us/w/91251683181?tk=9vyym4gehi0cHxdYwYdOOiYbUw2lCZzZ_lKD0ceCABo.D Please take a few moments to evaluate this course: Excellent Good Fair Poor N/A Program Content ✓ Instructor Quality ✓ Written Materials ✓ Facility ✓ Technology ✓ Relevence to my practice: assessment police engineering st peace college policing conduct , Comments: policing conduct investigate analyse design framework regulatory mendator policing portofolio eveidence low design in order to resolve in good conduct system managemnt low conduct , in court poe s, Create your own Google Form Report Abuse • Our Work • 30x30 Initiative: Advancing Women in Policing • Chicago Neighborhood Policing Initiative • Legislation • Litigation • Regulating Use of Technology in Policing • ReImagining Public Safety • SAJE Policing Assessment Our Mission: We Partner With Communities And Police To Promote Public Safety Through Transparency, Equity, and Democratic Engagement. Our work focuses on front-end, or democratic, accountability—meaning the public has a voice in setting transparent, ethical, and effective policing policies and practices before the police or government act. The goal is to achieve public safety in a manner that is equitable, non-discriminatory, and respectful of public values. Broadly speaking, our work is centered around three focus areas: Front-End Voice in Policing: We believe that in a democratic society, the public must have a voice in how it is

policed. Regulation of Policing Technology: We believe that there must be transparency and public debate around the adoption of new policing technologies. Reimagining Public Safety: We believe it is time for a national conversation about what public safety means, and how it is best achieved. Explore our focus areas to learn more about our work. RE: New WFCP Membership Application Inbox WFCP Secretariat 2:15 AM (7 hours ago) to me Hello Tshingombe, Thank you for your interest in joining the WFCP. To confirm, are you applying for institutional membership or association membership? Sincerely, Joanna Andrews Program Officer, WFCP Secretariat World Federation of Colleges and Polytechnics (WFCP) 1 Rideau Street - Suite 701, Ottawa ON K1N 8S7 Email: secretariat@wfcp.org Website: www.wfcp.org Subscribe to our Newsletter From: Tshingombe Tshitadi Sent: Tuesday, September 24, 2024 1:48 AM To: WFCP Secretariat Subject: New WFCP Membership Application About the Applicant Are you a: private institution Type of membership requested Association Membership Are you accredited? not applicable Name of Applicant (individual or institution) Tshingombe engineering/St peace college Number of students enrolled in your institution 20 Name of accrediting body St peace sasseta Please share your reasons for joining WFCP Engineering electrical assessment police officer, Contact Information Contact name Tshingombe Tshitadi Contact email tshingombefiston@gmail.com Contact telephone +270725298946 Website https://tshingombefiston.com Address 20 percy 1030 Rockview 103, Jhb Gauteng South Africa Map It Application Update Inbox Met Recruitment Team Tue, Sep 24, 2:15 PM (19 hours ago) to me Vacancy: 18023 - Intelligence Manager – Public Order & Public Safety Intelligence - Inspector – MO2 Dear tshingombe, Thank you for your application for a new position within the Met. To be eligible to apply for this new position, we have a set of criteria that applicants need to meet. Based on the information you have shared so far; we regret to inform you that you are not eligible to progress with your application. Your individual answers suggest that you do not meet the application criteria. You can read more about our eligibility criteria on our Careers Website or by reviewing information available on MyHR. We understand that this will be disappointing news for you but would like to thank you for your interest in this position and wish you all the best for the future. Shared Services Connected Ltd – Delivering services in partnership with the Metropolitan Police Service Phone: 01633 632500 Email: Enquiries.PoliceJobs@police.sscl.com Met Recruitment Team Tue, Sep 24, 2:20 PM (19 hours ago) Vacancy: 18028 - Intelligence Manager - Public Order & Public Safety Intelligence - Detective Inspector - MO2 Met Recruitment Team Tue, Sep 24, 2:20 PM (19 hours ago) Vacancy: 17954 - PA to DCS Band E Met Recruitment Team Tue, Sep 24, 2:25 PM (19 hours ago) Vacancy: 17991 - Detective Constable - DASO - Professional Standards Met Recruitment Team Tue, Sep 24, 2:25 PM (19 hours ago) Vacancy: 17874 - Quality Assurance Lead Met Recruitment Team Tue, Sep 24, 2:30 PM (19 hours ago) Vacancy: 17915 - Complaint Resolution Unit (CRU) - Complaint handler Met Recruitment Team Tue, Sep 24, 2:30 PM (19 hours ago) Vacancy: 17879 - Electronics Development Engineer Met Recruitment Team Tue, Sep 24, 2:35 PM (19 hours ago) Vacancy: 18014 - Developing Threats Team – PC Met Recruitment Team Tue, Sep 24, 2:35 PM (19 hours ago) Vacancy: 17806 - Licensing Admin Support Officer Met Recruitment Team Tue, Sep 24, 2:40 PM (19 hours ago) Vacancy: 17978 - Professional Standards Unit (MO12/MO4/CRIB) Band D Met Recruitment Team Tue, Sep 24, 2:40 PM (19 hours ago) Vacancy: 18051 - Operations Lead - Superintendent Met Recruitment Team Tue, Sep 24, 2:45 PM (19 hours ago) Vacancy: 17990 - MO2 Met Intel - ANPR Auditor - Innovation Deployment & Compliance Team Met Recruitment Team Tue, Sep 24, 2:45 PM (19 hours ago) Vacancy: 18033 -

Police Constable DPS - Professional Standard Unit Met Recruitment Team Tue, Sep 24, 2:55 PM (19 hours ago) Vacancy: 18008 - CSC - Offender Management - Central Orders Team Police Constable Met Recruitment Team Tue, Sep 24, 2:55 PM (19 hours ago) Vacancy: 17775 - PSO - Threat Assessment & Intelligence Unit - Intelligence Officer – Researcher Met Recruitment Team Tue, Sep 24, 2:55 PM (19 hours ago) Vacancy: 18048 - Met Intel PC ANPR Investigations Met Recruitment Team Tue, Sep 24, 3:00 PM (18 hours ago) Vacancy: 18047 - Met Intel DS ANPR Investigations Met Recruitment Team Tue, Sep 24, 3:00 PM (18 hours ago) Vacancy: 17922 - Intelligence Officer -Bomb Data Centre - FMT - SO15 Met Recruitment Team Tue, Sep 24, 3:10 PM (18 hours ago) Vacancy: 17223 - Digital Engagement Officer Met Recruitment Team Tue, Sep 24, 3:10 PM (18 hours ago) Vacancy: 18042 - Covert Admin (COVAD) Deputy Manager Met Recruitment Team Tue, Sep 24, 3:10 PM (18 hours ago) Vacancy: 17823 - SQL Server Database Administrator - Counter Terrorism Policing HQ Met Recruitment Team Tue, Sep 24, 3:10 PM (18 hours ago) Vacancy: 18005 - PC - MO6 Public Order Crime Team Met Recruitment Team Tue, Sep 24, 3:15 PM (18 hours ago) Vacancy: 17986 - Driver Assistance Centre Team Leader Met Recruitment Team Tue, Sep 24, 3:15 PM (18 hours ago) Vacancy: 18006 - DS - Public Order Crime Team Met Recruitment Team Tue, Sep 24, 3:30 PM (18 hours ago) Vacancy: 18050 - Resource Management Office Manager Met Recruitment Team Tue, Sep 24, 3:30 PM (18 hours ago) Vacancy: 17925 - Digital Project Officer -

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NDES Service 3 - SO15 Met Recruitment Team Tue, Sep 24, 3:30 PM (18 hours ago) Vacancy: 18059 - Detective Sergeant - Complex Investigation Team (CIT) Met Recruitment Team Tue, Sep 24, 3:30 PM (18 hours ago) Vacancy: 18078 - National Counter Terrorism Security Office (NaCTSO) – Venues and Public Spaces Unit- Detective Inspector - Counter Terrorism Policing HQ Met Recruitment Team Tue, Sep 24, 3:35 PM (18 hours ago) Vacancy: 18015 - Safety Camera Processing Clerk Met Recruitment Team Tue, Sep 24, 3:40 PM (18 hours ago) Vacancy: 18026 - Health & Safety/Accommodation Manager - Band D - Counter Terrorism Policing HQ Met Recruitment Team Tue, Sep 24, 3:40 PM (18 hours ago) Vacancy: 18081 - MO19 Specialist Firearms Command – Development, Delivery, Equipment & Finance Sergeant Met Recruitment Team Tue, Sep 24, 3:45 PM (18 hours ago) Vacancy: 18095 - Complaint Handler Met Recruitment Team Tue, Sep 24, 3:50 PM (18 hours ago) Vacancy: 17848 - MBS Reporting Senior Analyst Met Recruitment Team Tue, Sep 24, 3:50 PM (18 hours ago) Vacancy: 18067 - Dev Ops Engineer (Cloud Platform) - Technology CSC - Police Staff - Counter Terrorism Policing HQ Met Recruitment Team Tue, Sep 24, 3:55 PM (18 hours ago) Vacancy: 17977 - MetCC Centre Facilities Support Staff Met Recruitment Team Tue, Sep 24, 4:00 PM (17 hours ago) Vacancy: 17872 - BCU Learning and Development Lead Met Recruitment Team Tue, Sep 24, 4:05 PM (17 hours ago) Vacancy: 17923 - Business Analyst – Strategy, Planning and Performance (SPP) Counter Terrorism Policing HQ Met Recruitment Team Tue, Sep 24, 4:05 PM (17 hours ago) Vacancy: 17987 - Character Enquiry Centre Team Leader Met Recruitment Team Tue, Sep 24, 4:10 PM (17 hours ago) Vacancy: 18086 - MO7 Taskforce TSG -Police Sergeant Met Recruitment Team Tue, Sep 24, 4:15 PM (17 hours ago) Vacancy: 17229 -Higher Computer Aided Surveyor / 3D Specialist Met Recruitment Team Tue, Sep 24, 4:20 PM (17 hours ago) Vacancy: 18065 - Counter Weapons Threat Team Officer - PC - Counter Terrorism Policing HQ Met Recruitment Team Tue, Sep 24, 4:25 PM (17 hours ago) Vacancy: 18063 - MO19 Specialist Firearms Command - Tactical Firearms Commander Inspector (UNARMED) Met Recruitment Team Tue, Sep 24, 4:40 PM (17 hours ago) Vacancy: 18064 - MO19 Specialist Firearms Command - Tactical Firearms Commander Detective Inspector (UNARMED) Met Recruitment Team Tue, Sep 24, 9:30 PM (12 hours ago) to me Vacancy: 18085 - Royalty and Specialist Protection - RaSP 400 Inspector Met Recruitment Team Tue, Sep 24, 9:35 PM (12 hours ago) to me Vacancy: 18009 - MO7 Taskforce Mounted Branch Inspector Met Recruitment Team Tue, Sep 24, 9:35 PM (12 hours ago) to me Vacancy: 16708 - 202402 - MPS Return Scheme Approaching Retirement Met Recruitment Team Tue, Sep 24, 9:40 PM (12 hours ago) to me Vacancy: 18004 - Digital Forensic Manager Met Recruitment Team Tue, Sep 24, 9:45 PM (12 hours ago) to me Vacancy: 17666 - Motor Vehicle Technician Met Recruitment Team Tue, Sep 24, 9:55 PM (12 hours ago) to me Vacancy: 17392 - Volunteer Police Cadet Leader Google Forms Thu, Sep 26, 9:28 AM (1 day ago) to me Thanks for filling out Removing Barriers to Officer Accountability Here's what was received. Removing Barriers to Officer Accountability Section 1: Attorney Affirmation is MANDATORY if you wish to receive CLE credit. Section 2: Course Evaluation is ENCOURAGED to inform the state of New York on our program. Email * tshingombefiston@gmail.com Section 1: Attorney Affirmation NY CLE Credit for Webinar To obtain New York CLE credit, please complete and sign this form and then submit it to the Policing Project at NYU Law. Your participation must be verified by the provider. Experienced New York attorneys (attorneys who have been admitted to the New York bar for more than two years) may earn CLE credit through nontraditional formats. Newly admitted attorneys (attorneys who have been admitted to the New York Bar for two years or less) should confirm that the

format is permissible for the category of credit. New York attorneys should retain a copy of this affirmation. Email * tshingombefiston@gmail.com Format: Webconference Course Code(s) During each session of the conference you will see and/or hear one or more CLE course codes. Please enter the code(s) in the fields below. If you do not enter the correct code(s), you will not be awarded New York CLE credit. If you did not attend the entire conference, you are able to receive partial credit for the individual sessions you attended in their entirety. List all code(s) for September 24, 2024 * Model statute: An Act to Removing Barriers to Accountability and Facilitate Robust Oversight Our model statute gives states guidance on how to remove barriers to law enforcement officer accountability and oversight commonly found in state or local laws, and/or in police collective bargaining agreements. Advocacy Toolkit: Community Oversight of Police Union Contracts This toolkit by the Legal Defense Fund breaks down accountability-impeding provisions in over 100 police union contracts, providing a resource for advocates and community members engaging in police collective bargaining agreement reform efforts. Journal Article: Stephen Rushin, Police Union Contracts, 66 Duke Law Journal 1191-1266 (2017) This article collects and analyzes more than 170 police union contracts, showing how provisions in these agreements serve as barriers to officer accountability. Journal Article: Kevin M. Keenan & Samuel Walker, An Impediment to Police Accountability - An Analysis of Statutory Law Enforcement Officers' Bills of Rights, 14 B.U. PUB. INT. L.J. 185 (2005) This law review article identifies provisions in Law Enforcement Bills of Rights (LEOBORs) from 14 different states that are impediments to holding officers accountable, focusing on five kinds of provisions that are particularly harmfulVictor Dempsey, Community Organizer, Legal Defense Fund Victor Dempsey is a community organizer at the NAACP's Legal Defense Fund (LDF). Mr. Dempsey has devoted his career to ending police violence through community organizations, eventually founding his own organization to support and advocate for impacted families called Families are the Frontlines. Reneé Hall, former Chief of the Dallas Police Department Reneé Hall is the former Chief of the Dallas Police Department, the first woman to lead the department. Chief Hall has worked to bridge communities with law enforcement through the implementation of a civilian oversight board and has been a champion of accountability by establishing a duty to intervene policy when officers witness excessive force. She graduated with masters degrees from the University of Detroit Mercy (M.S.) and Grambling State University (B.S.). Stephen Rushin, Professor of Law at Loyola University Chicago School of Law Stephen Rushin is the Associate Dean of Faculty Research and the Judge Hubert Louis Will Professor of Law at Loyola University of Chicago School of Law. He has published a series of articles on police unions and the officer internal disciplinary procedures. His research interests include policing, criminal procedure, and criminal sentencing. His work has recently appeared in the Stanford Law Review, the University of Pennsylvania Law Review, the California Law Review, the Cornell Law Review, the Duke Law Journal, the Vanderbilt Law Review, the Texas Law Review, the Iowa Law Review, the Minnesota Law Review, the George Washington Law Review, the Fordham Law Review, the Boston College Law Review, and the Florida Law Review, among other journals. He published the premier article on police union contracts in the Duke Law Journal in 2017. Rushin graduated from Berkeley (J.D. and PhD) and the University of Texas (B.A.). HOST Josh Parker, Deputy Director of Legislative Policy, Policing Project at NYU Law Josh Parker is the Deputy Director of Legislative Policy at the Policing Project. He is a policing policy and legal expert who co-drafted the Removing Barriers to Accountability model statute and has counseled legislators and agency leaders across the

country on how to reform their laws to better address police misconduct. Given his expertise, Josh is often sought for legislative testimony, media interviews, and public comment on a number of police misconduct topics. He graduated from the University of Chicago Law School (J.D.), where he served as an Articles Editor of the University of Chicago Law Review, and Duke University (B.A.).21-CIP-J / FFPSA & Kinship (Part 1),Date & Time Sep 24, 2024 09:00 PM Johannesburg Webinar ID 912 5168 3181,Tue Sep 24, 2024 9pm – 10pm (SAST) Where https://nyu.zoom.us /w/91251683181?tk=9vyym4gehi0cHxdYwYdOOiYbUw2lCZzZ_lKD0ceCABo.DQcAAAAVPwYvbRZjNTdyNEx1S1NaQzljV2s3NlU2SEdRAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA&uuid=WN_3jfCNZddR7iCjsRfhRXPag Who Gabby Bayness 30x30 Initiative: Advancing Women in Policing Chicago Neighborhood Policing Initiative Legislation Litigation Regulating Use of Technology in Policing ReImagining Public Safety SAJE Policing Assessment Our Mission: We Partner With Communities And Police To Promote Public Safety Through Transparency, Equity, and Democratic Engagement. Our work focuses on front-end, or democratic, accountability—meaning the public has a voice in setting transparent, ethical, and effective policing policies and practices before the police or government act. The goal is to achieve public safety in a manner that is equitable, non-discriminatory, and respectful of public values. Broadly speaking, our work is centered around three focus areas: Front-End Voice in Policing: We believe that in a democratic society, the public must have a voice in how it is policed. Regulation of Policing Technology: We believe that there must be transparency and public debate around the adoption of new policing technologies. Reimagining Public Safety: We believe it is time for a national conversation about what public safety means, and how it is best achieved. Explore our focus areas to learn more about our work.*,. Name of CLE Provider: New York University School of Law - Policing Project Please confirm the following statements by checking the boxes and typing your name in the signature field below * ✓ I acknowledge receipt of the course materials for Removing Barriers to Officer Accountability ✓ I certify that I have listened to and/or viewed Removing Barriers to Officers Accountability in its entirety for the sessions for which I've entered codes. Therefore, I request that I be awarded the applicable number of New York CLE credits for this course. Signature * tshingombe tshitadi Date of completion of CLE course (New York attorneys earn CLE credit as of the date they complete a CLE course): * MM 09 / DD 26 / YYYY 2024 Attorney email address to receive CLE certificate (if different from the address above): tshingombekb@gmail.com Section 2: Course Evaluation Course evaluations are optional, but must be offered to all attorneys who participated in today's course. Program Title 21-CIP-J / FFPSA & Kinship (Part 1),Date & Time Sep 24, 2024 09:00 PM Johannesburg Webinar ID 912 5168 3181,Tue Sep 24, 2024 9pm – 10pm (SAST) Where https://nyu.zoom.us /w/91251683181?tk=9vyym4gehi0cHxdYwYdOOiYbUw2lCZzZ_lKD0ceCABo.DQcAAAAVPwYvbRZjNTdyNEx1S1NaQzljV2s3NlU2SEdRAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA&uuid=WN_3jfCNZddR7iCjsRfhRXPag Who Gabby Bayness 30x30 Initiative: Advancing Women in Policing Chicago Neighborhood Policing Initiative Legislation Litigation Regulating Use of Technology in Policing ReImagining Public Safety SAJE Policing Assessment Our Mission: We Partner With Communities And Police To Promote Public Safety Through Transparency, Equity, and Democratic Engagement. Our work focuses on front-end, or democratic, accountability—meaning the public has a voice in setting transparent, ethical, and effective policing policies and practices before the police or government act. The goal is to achieve public safety in a manner

that is equitable, non-discriminatory, and respectful of public values. Broadly speaking, our work is centered around three focus areas: Front-End Voice in Policing: We believe that in a democratic society, the public must have a voice in how it is policed. Regulation of Policing Technology: We believe that there must be transparency and public debate around the adoption of new policing technologies. Reimagining Public Safety: We believe it is time for a national conversation about what public safety means, and how it is best achieved. Explore our focus areas to learn more about our work.*, Date MM 09 / DD 25 / YYYY 2024 Speaker(s): 21-CIP-J / FFPSA & Kinship (Part 1),Date & Time Sep 24, 2024 09:00 PM Johannesburg Webinar ID 912 5168 3181,Tue Sep 24, 2024 9pm – 10pm (SAST) Where https://nyu.zoom.us /w/91251683181?tk=9vyym4gehi0cHxdYwYdOOiYbUw2lCZzZ_lKD0ceCABo.DQcAAAAVPwYvbRZj NTdyNEx1S1NaQzljV2s3NlU2SEdRAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA& uuid=WN_3jfCNZddR7iCjsRfhRXPag Who Gabby Bayness 30x30 Initiative: Advancing Women in Policing Chicago Neighborhood Policing Initiative Legislation Litigation Regulating Use of Technology in Policing ReImagining Public Safety SAJE Policing Assessment Our Mission: We Partner With Communities And Police To Promote Public Safety Through Transparency, Equity, and Democratic Engagement. Our work focuses on front-end, or democratic, accountability—meaning the public has a voice in setting transparent, ethical, and effective policing policies and practices before the police or government act. The goal is to achieve public safety in a manner that is equitable, non-discriminatory, and respectful of public values. Broadly speaking, our work is centered around three focus areas: Front-End Voice in Policing: We believe that in a democratic society, the public must have a voice in how it is policed. Regulation of Policing Technology: We believe that there must be transparency and public debate around the adoption of new policing technologies. Reimagining Public Safety: We believe it is time for a national conversation about what public safety means, and how it is best achieved. Explore our focus areas to learn more about our work.*, Please take a few moments to evaluate this course: Excellent Good Fair Poor N/A Program Content ✓ Instructor Quality ✓ Written Materials ✓ Facility ✓ Technology ✓ Relevence to my practice: engineering project assessment police low enforcement portfolio discipline quality management evidence low in order police design thing resolve order in gov system orientation Comments: god thing on disciplinary conduct code police Job Description Schneider Electric's EcoStruxure™ Automation Expert (EAE) is a software-centric industrial automation system that creates successive improvements throughout your operational lifecycle. The EcoStruxure team supports countries globally in deploying this solution. Your role: Reporting to the EcoStruxure EMEA Manager (Francisco) and as part of a team of 7 Project Managers, you will participate in the deployment of the EAE automation solution in Europe. You will support our clients (internal and external) during pre-sales and project execution phases. Your main missions: • Promote the technical benefits of the EAE solution in Europe with Schneider Electric entities in the relevant countries (joint visits, presentations, demonstrations) • Provide technical support to Schneider's local pre-sales teams • Assist in creating technical documents, technical guides, white papers, knowledge base articles, etc. • Support pilot project execution and execution of key projects for clients (direct and indirect) • Train internal teams in different countries using Schneider's local technical resources • Develop the autonomy of each country in deploying EAE Your profile: • Master's degree in Engineering or equivalent in automation • 3 years of minimum experience in design and automation Your skills: • Understanding of OT (Operational Technology) and IT (Information Technology) convergence to

address client sustainability challenges • Understanding of DCS (Distributed Control Systems) concept and implementation • Mastery of secure, open, interoperable, and scalable control systems • Appreciated knowledge of the IEC61499 standard • Aptitude for assembling software components to meet customer requirements • Software integration experience • Commercial aptitude, good communication skills, relationship building, collaboration, and teaching • Curiosity, organizational skills, and autonomy • Fluent in English and French We know that skills manifest in many ways and can be based on your life experience. If you do not necessarily meet all the requirements listed, we still encourage you to apply. We offer you: Our offer includes an attractive remuneration and goes well beyond. If you join Schneider Electric, here's an idea of all that we can offer you to live the best possible experience: • A competitive salary, individual bonus, as well as profit-sharing and participation bonuses rewarding everyone's efforts • A range of social benefits that make life easier: from CSE to rich catalogs, health insurance that meets all needs, generous savings and retirement plans, an advantageous employee share ownership program • Professional development through training, mobility and internal promotion (local and international), skills sharing, etc. • An integration journey from your first day

to give you the keys to success at Schneider Electric within a culture that promotes diversity, professional fulfillment, and inclusion • Work-life balance through our telecommuting policy (up to 48% telecommutable time, equipment included), support for parenthood, inter-company childcare facilities, etc." About Our Company Why us? Schneider Electric is leading the digital transformation of energy management and automation. Our technologies enable the world to use energy in a safe, efficient and sustainable manner. We strive to promote a global economy that is both ecologically viable and highly productive ob Description Schneider Electric's purpose is to empower all to make the most of our energy and resources, bridging progress and sustainability - we call this Life Is On. Our mission is to be the digital partner for sustainability and energy efficiency: https://www.youtube.com/watch?v=VbldHPFltQQ Great people make Schneider Electric a great company - and we are currently recruiting for a Budapest-based, Italian speaking Energy Sourcing Analyst to support the sourcing activity in the Italian market. You will be an active member of our energy and sustainability services group, vital to the future success of the business, and you will play a key role in assisting the team facilitate the delivery of our services to clients across Europe. Please note, this is an Entry level role within the team and this will be a Maternity Cover, starting out as a 2-year-long fixed-term contract with the possibility to extend. Purpose of the job: Deliver effective and efficient energy procurement services (for electricity and natural gas) for our Clients. Maintain effective working relationships at an operational level with key Internal (Client Management, Data, Solutions, Risk Management) and External Stakeholders (Energy Suppliers). Drive operational excellence by participating in process and service improvements in response to market developments and business targets. What you will do: • Analyze energy supply contract prices and terms and negotiate with energy suppliers to ensure optimal contracts are secured • Manage client and supplier relationships through excellent formal and informal communication • Work closely with the Client Management and other internal teams to deliver an exceptional level of service to our clients • Develop and maintain a deep understanding of the Italian energy markets and legislation • Maintain regular contact with energy suppliers in order to ensure flawless service delivery to our client • Effectively create/communicate regional market opinions and knowledge to internal/external clients • Manage pre-tender activities through collecting data, invoices, contracts, etc. • Manage the tendering, analysis and subsequent contract award and placement processes relating to complex energy supply contracts • Negotiate and utilise quantitative and qualitative techniques to deliver optimal energy supply contract terms and prices for our clients through regular interaction with the energy suppliers on the related markets • Collaborate with Sourcing leadership to identify, evaluate, and incorporate efficiencies, new services, and innovative ideas/concepts • Participate in budget forecast creation process What we need from you: • Excellent knowledge of MS Excel is a must • University/College degree preferably in Finance/Economics/Maths/Science or Energy related studies or equivalent experience in energy procurement / client or supplier management / contract management / negotiations • Fluency in English AND Italian is a must • Experience of the energy industry gained either at a supplier or an energy consultancy is a big advantage • Experience in multinational environment is an advantage Skills, competencies that can make you the successful candidate: • Strong analytical and logical skills • Be an excellent influencer, negotiator and collaborator, forming effective relationships with demanding stakeholders • Great communication skills, capablility of engaging people of varying levels in seniority and experience • Strong time management and

organisational skills • Results focused and self-directed mindset What we offer: • Life, Accident and Health insurance packages (Medicover White Spring) • Cafeteria allowance • Home Office and Utility allowances • Yearly bonus • Global Family Leave • Flexible and hybrid working model • WESOP (World Employee Share Ownership Plan) to become a shareholder in the company • Engagement groups within the company: get a sneak peek to our company life at https://download.schneider-electric.com/files?p_Doc_Ref=Engagement_groups_HU • Working at the company that ranked #1 in TIME Worlds' Most Sustainable Companies in 2024 • International, diverse environment and a company culture that encourages raising questions and ideas - to make an impact • Real future career building opportunities locally & globally • Working directly with international customers dustrial / Manufacturing senior Engineering - 00934K • Manage the process flow and qualification in collaboration with BU and GSC to prepare a successful industrial transfer • Lead the deployment on NPI and capacity increase projects at the facility ensuring consistency between BU & GSC • Work with cross-functional and remote teams to guarantee the deployment of industrial processes • Accountable for decision making and project execution in compliance with project goals, business, industrial y customer requirements • Accountable for projects requirements: resources, product cost fie, planning & schedule, capacity, SPS and other deliverables • Decision making based on priorities and risk assessment • Ensure the capacities adaptation according to the dedicated tools (CAMA, CORIM, Bridge ..), internal or external • Perform regular Queue Simulations, using the waiting queue design tool, in order to optimize Lead Times and assure capacity of the lines. • Define & maintain a referential operating time based on measurement tools adapted (MTM-UAS-timer-video analysis.) • Ensure the profitability of investments adapted to the needs of optimization and development process Guide the choice of designers by providing industrial and logistical requirements • Is the “Time determination & Ergonomics Specialist/Referent” within his perimeter. • Responsible for Productivity action plan in his perimeter (define, implement) • Implement adaptation on the processes and manufacturing workstation for existing products by improving the industrial performance, in manual process, automatic process & PLC (Programmable Logic Control) using SPS techniques and tools. • Involved in the specifications and quotation of new line architectures and industrial scenarios in order to meet Safety/Quality/Lead Times and productivity requirements. • Optimize Lead Times and assure capacity of the lines. • Write operator work instructions for training • Study the feasibility & profitability of investments adapted to the needs. • Qualifies means and processes, in plant but also at suppliers' location. Application Update Inbox Met Recruitment Team Sat, Oct 26, 7:40 PM (16 hours ago) to me Vacancy: 18130 - National Referral Mechanism Coordinator Dear tshingombe, Thank you for your application for a new position within the Met. To be eligible to apply for this new position, we have a set of criteria that applicants need to meet. Based on the information you have shared so far; we regret to inform you that you are not eligible to progress with your application. Your individual answers suggest that you do not meet the application criteria. You can read more about our eligibility criteria on our Careers Website or by reviewing information available on MyHR. We understand that this will be disappointing news for you but would like to thank you for your interest in this position and wish you all the best for the future. Shared Services Connected Ltd – Delivering services in partnership with the Metropolitan Police Service Phone: 01633 632500 Email: Enquiries.PoliceJobs@police.sscl.com Incomplete Application Inbox Met Recruitment Team Thu, Oct 24, 10:15 PM (3 days ago) to me Vacancy: 14783 - 202305- Police Community

Support Officer (PCSO) tshingombe, We don't think you want to continue with your application, and are sorry to see you go. We've closed down your application for now, so that we don't keep bothering you if you've decided this isn't the opportunity for you. If we've got this wrong, and you want to carry on, please get in touch and we'll open your application form back up. Our contact details are below if you want to give us a call. Being a Police Constable isn't for everybody, so we understand that sometimes applicants change their mind. If you've decided this isn't the role for you, but you're still interested in joining the Met, please take a look at the other opportunities we've currently got available - you can view our careers website here. Have a great day tshitadi! Yours sincerely Shared Services Connected Ltd – Delivering services in partnership with the Metropolitan Police Service Phone: 01633 632500 Email: Enquiries.PoliceJobs@police.sscl.com HCP Open Day with the MPS Inbox Dawn.James@met.police.uk Thu, Oct 24, 3:09 PM (3 days ago) to Dear Healthcare Professional, Thank you for registering your interest to attend our Healthcare Professional Open Day today at Charing Cross Police Station. Unfortunately you didn't attend, you can however still apply for the role by clicking on the link below, remember to attach a CV and personal statement. Become a custody healthcare practitioner | Metropolitan Police Please do contact me if you have any queries. Kind Regards Dawn Dawn James | Deputy Healthcare Director (Acting) Met Detention (M09) 07917 586675 | dawn.james@met.police.uk Lambeth HQ, 109 Lambeth Road, London, SE1 7LP NOTICE - This email and any attachments are solely for the intended recipient and may be confidential. If you have received this email in error, please notify the sender and delete it from your system. Do not use, copy or disclose the information contained in this email or in any attachment without the permission of the sender. Metropolitan Police Service (MPS) communication systems are monitored to the extent permitted by law and any email and/or attachments may be read by monitoring staff. Only specified personnel are authorised to conclude binding agreements on behalf of the MPS by email and no responsibility is accepted for unauthorised agreements reached with other personnel. While reasonable precautions have been taken to ensure no viruses are present in this email, its security and that of any attachments cannot be guaranteed. to me Dear Fiston, Thank you for applying for the position of Service Centre Helpdesk Coordinator - 33335. We appreciate the opportunity to consider you for employment with Eaton. This communication is to let you know that this job has been filled. We invite you to visit www.eaton.com/careers and apply to other opportunities that match your current career aspirations. Thank you for your continued interest in Eaton. Best regards, Tshingombe, will you answer a question for us? Inbox Schneider Electric Sat, Oct 26, 2:30 PM (21 hours ago) to me Hello Tshingombe, Recently, you applied and were considered for a position with Schneider Electric. While the outcome has not resulted in an offer of employment, we would appreciate your time in answering one final question which will help us understand your lasting impression of Schneider Electric. Our goal is to treat all candidates with fairness and respect and your lasting impression helps us understand if we have achieved our goal. Pulse - One Question Survey Thank you. We look forward to hearing from you! *Please note that all feedback is confidential and is not associated with any application. Any feedback gathered will not impact any potential employment with Schneider Electric. This email is being sent from an unmonitored email address. Schneider Electric can be reached at the following: 800 Federal Street North Andover, MA 01810 https://www.se.com/us/en/ / (978) 975-9600 Survale sends surveys on behalf of Schneider Electric at their request and has no involvement with

employment decisions. We can be reached at contactus@survale.com. To unsubscribe click here Powered by Survale In Automatic reply: letter explanation theoretical pratical base work , n diplomat award engineering electrical Inbox CallCentre via dhetgovza.onmicrosoft.com 9:16 AM (8 hours ago) to me Please note that this is an automated response, do not reply to it. Thank you for contacting the Department of Higher Education and Training Call Centre. We appreciate your inquiry. Regarding NN Diploma, Nated, and NCV certificate enquiries: • All applications for new issues, replacements, or combination requests must be submitted directly to the relevant college. • Please note that there is a minimum waiting period of 3-6 months for diploma applications. • The issuance of NN Diploma is currently paused. We have communicated this to all colleges. • In the meantime, students whose diplomas are finalized but awaiting printing can obtain a confirmation letter from their college. We apologize for any inconvenience this may cause and appreciate your understanding. MMA support Inbox MMA Support via freshdesk.com Mon, Oct 21, 8:41 AM (2 days ago) to me Hi Tshingombe Thanks so much for reaching out! We know there's nothing worse than sending an email and getting no response. So, to make sure that you know that we are aware of your email, we have created this handy auto-reply just to let you know that we have your email and we are assigning it to the best person to help you! We like to be quite speedy on our replies, so you should get a response soon. Your experience is our first priority and our agents are here from Monday to Saturday between 08h00 and 20h00 and on Sundays between 08h00 and 19h00. You can also chat with our agents directly using our live chat on the Shoprite app. In the meantime, if you have general questions about the Money Market Account, check out our website for some handy walk-throughs and answers to some questions you may have. We have also created some useful videos on how to use the Money Market Account, please click here to view them. If you have any additional information that you think will help us to assist you, please feel free to reply to this email. We look forward to chatting soon! Money Market Account Services Team (no subject) Inbox Ahmed Abdelmonem (International Supplier) Tue, Oct 22, 1:52 PM (1 day ago) to me Hi Tshingombe, I trust this email finds you in good health. My name is Ahmed Abdelmonem, and I serve as a Customer Lifecycle Manager for Microsoft. My responsibilities include overseeing the SMB segment in the South African market. Within my role, I manage various Microsoft workloads, including: • Microsoft Azure: Our expansive cloud platform that provides an array of services tailored for the development, deployment, and management of applications. • Microsoft Dynamics: An integrated suite of ERP and CRM software applications designed to streamline business processes. • Modern Workplace: A collection of solutions aimed at enhancing collaboration and productivity within today's digital-first work environment. • Copilot: Our latest AI-driven platform that assists in code generation and other complex tasks, ensuring efficiency and innovation. I would like to connect with you to discuss your needs and explore the best possible solutions for your organization. Please let me know a convenient time for us to connect. Thank you for your attention, and I look forward to connecting with you soon. Regards, Ahmed Abdelmonem Customer Lifecycle Manager | SMB South Africa | MEA v-ahmabdelmo@microsoft.com Application Unsuccessful Inbox SARS Human Capital and Development Sat, Oct 26, 9:00 AM (1 day ago) to me Dear Tshingombe Tshitadi , Thank you for applying for Specialist Advisor: Direct Tax (Legal and Domestic Tax). After careful consideration and review of your profile against the minimum requirements (qualifications and work experience) of the job, we regret to inform you that your application was not successful. We

encourage you to visit our career site and search other available opportunities. Thank you for showing interest and we wish you all the best in your job search. Thank you for applying to Schneider Electric! Inbox Schneider Electric Unsubscribe Sat, Oct 26, 5:22 AM (1 day ago) to me Hi Tshingombe, We appreciate your interest in career opportunities at Schneider Electric! Thank you for taking the time to apply for the Senior Power Electronics Architect position we have posted online. One of our Talent Acquisition Professionals will review your submission and contact you either by phone or email if you are selected to move forward in the process. We will make every attempt to complete this initial review within 10 – 15 business days; however, we ask for your understanding if it takes slightly longer due to high volumes. At Schneider Electric, we desire to provide reasonable transparency throughout the process. During the application process, you created an account in which you can log-in to check the status of your application at any time. You can also use this account to update and strengthen your profile. Thank you, The Schneider Electric Talent Acquisition Team Access My Career Portal Search for Jobs It is the policy of Schneider Electric to provide equal employment and advancement opportunities in the areas of recruiting, hiring, training, transferring and promoting all qualified individuals regardless of race, religion, color, gender, disability, national origin, ancestry, age, military status, sexual orientation, marital status, or any other legally protected characteristic or conduct. _____ This message was sent to tshingombefiston@gmail.com. If you don't want to receive these emails from this company in the future, please go to: https://se.icims.com/icims2/?r=6EA61614346&contactId=5749653&pid=17 © Schneider Electric Schneider Electric Sat, Oct 26, 5:26 AM (1 day ago) to me Hi Tshingombe, We appreciate your interest in career opportunities at Schneider Electric!

10/27/2024, 12:52 PM

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Bonus Edition

Power & Energy Solutions

Looking for more power- and energy-related content? This bonus edition of ElektorMag features additional content to inspire you to design your own solutions. As usual, we include articles on other interesting topics as well.

Is your grid supply steadily available? The article, “Mains Power Outages Monitor,” details a circuit that constantly monitors mains power and signals outages.

Before high-power semiconductor-based recti! ers, converting AC to DC in industrial and transportation applications was a signi! cant challenge. Devices were bulky, fragile, used polluting materials, and demanded frequent maintenance. Check out the article, “Mercury Recti! ers,” to learn about mercury arc recti! ers and more.

Brush-type DC motors are often replaced by brushless (BLDC) and stepper motors, but their simpler control still has advantages. The article, “Speed Control of a Brushed DC Motor,” explores maintaining constant speed regardless of torque —

without a tachometer generator.
We hope you enjoy these articles and rest of the content in the Bonus edition. As you work on your own projects, be sure to document your progress on the Elektor Labs platform (*www.elektormagazine.com/labs*)!

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Is Your Grid Supply Steadily Available?

generator unit is larger and more expensive than a tacholess version of a motor.

If the motor is operated with a pulsed voltage (PWM), however, the speed is proportional to the duty cycle. At the same time, the motor operates as a generator in the off-phase of the PWM voltage so that its speed can be measured in this phase. In the past, in the analog age, the electronic effort for such a control was not insignificant, as can be seen from the schematic diagram in Figure 5.

A rectangle generator, a voltage-controlled pulse width modulator, a sample-and-hold circuit to measure the actual speed value, and a PI controller were required. In the digital world, the principle remains the same, but the effort required is consid erably reduced thanks to the use of a microcontroller.

By Rainer Schuster (Germany)

Brush-type DC motors are increasingly being replaced by their brushless (BLDC) and stepper motor competitors. However, their use still makes some sense, as the control effort is considerably lower. This article shows how to keep the speed of a DC motor with brushes constant regardless of the torque – and without a tachometer generator.

In the simplest case, a DC motor is connected to a variable voltage supply, as shown in Figure 1. The speed is (theoretically) propor tional to the supply voltage VM, but only as long as the torque is constant. Unfortu nately, the equivalent circuit diagram of the DC motor looks like Figure 2. The motor

winding not only has an inductance LM, but also an ohmic resistance of the copper wire, which is designated by RM. The higher the torque, the more voltage drops across RM, until finally there is no more voltage across the inductance LM and the motor stops (Figure 3).

Control with Tachogenerator or EMF Measurement

To compensate for these torque-dependent speed fluctuations, the motor was once usually coupled to a tachogenerator, which in turn supplied a voltage proportional to the speed (Figure 4). However, a motor-tacho

EMF Measurement Instead of Tachogenerator

RPM ~ VM
M
VM
Figure 1: In an ideal world, the speed is proportional to the motor voltage.
I ~ N
V = V – R x I
RPM ~ V
L
RM
M
M
M
M M M
M M
VM
Figure 2: In practice, the ohmic resistance of the motor winding joins its inductance.
U/min
I M
NM
Figure 3: The higher the torque, the slower the motor turns.
Rev.
target

value
Differential
amplifier
Tacho
generator
Motor
Voltage
regulator
Power
supply
M
Figure 4: Block diagram of a motor control system with tachogenerator.
PI-Regler
Drehzahl
Sollwert
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MOSFET-Schalter
Spannungsgesteuerter
Pulsbreitenmodulator
NF-Rechteck
Generator
Strom
versorgung
Motor
M
Figure 5: Block diagram of a motor control with EMF measurement.
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Practical Implementation of an EMF Control

As the complete circuit diagram in Figure 6 shows, an ATtiny45 microcon troller from Microchip with 4 kB of flash memory is used for control. The controller has only eight pins, but is perfectly suited for this application. It can be programmed “in system” via SV2 using an ISP program ming device.

The microcontroller is supplied with 5 V by the voltage regulator IC2, which is why the input voltage (and thus the motor voltage) must not exceed 24 V. Q1 and Q2 control the motor. Q2 is a PMOS transistor of the

type IRF4905, which can theoretically handle a motor current of 74 A, but only if a sufficiently dimensioned heat sink is used. Figure 7 shows what happens at the motor terminals during the different phases of the PWM signal: After the ON phase of the PWM signal, a demagnetization period follows in the OFF phase; then the motor generates an EMF voltage that is propor tional to the speed. This voltage is fed to the ADC2 analog-to-digital converter of the microcontroller via the R4/R5 voltage divider. R5 should be dimensioned so that the voltage at ADC2 does not exceed 5 V.

VB
R5
12 V
4k7
24 V
2k2

The setpoint speed, which is set by the RPM potentiometer or an external voltage of 0…5 V at X6, is sent to ADC1 of the micro controller. Diode D1 is absolutely neces sary because when the control voltage is switched off, the inductance of the motor discharges, which results in a negative voltage spike that D1 limits to about 0.7 V. Figure 8 shows a suggested printed circuit board layout for the motor control with EMF measurement; the required compo nents are listed in the Component List.

Software I

The software for the ATtiny45 was written in BASCOM. The controller is operated inter nally at 8 MHz. Timer0 is operated as a PWM timer in *Phase Correct PWM Timer* mode.

Demagnetization
Switch-o phase
Switch-on phase

Figure 7: The speed is measured in the switch-off phase after demagnetization. EMF = actual motor speed

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see
text
ISP
RPM
+5V
+5V
MOSI
GND
Reset
SCK
MISO
+5V
+24V max.
+24V max.
X2
Power
PB5(RESET/ADC0)
PB3(ADC3) PB2(SCK-ADC1)
PB4(ADC2)
PB1(MISO)
PB0(MOSI)
IC1
ATtiny45
GND
VCC
4
1
2
3
8
7
6
5
1
3
5
2
4
6
SV1
C1
1n
X1

C2
100n
C3
100n
Motor
D1
1N4004
Q2
IRF4905
G
D
S
R1
R2
47k
R3
1M
Q1
G
S
D
BS170
R4
R5
IC2
78L05
C4
100n
C5
100µ
35V
R6
10k
X3
C6
10µ
16V
R7
Figure 6: Practical circuit of the EMF motor control.

10k
10k
10kWith a prescaler of N = 64, the PWM
frequency is:

At 8 MHz, this results in a frequency of 245 Hz. The pulse width is set via register PWM0A from 0 to 255.

Depending on the motor type, the prescaler may need to be set to 256, for example if the induction phase is longer than or the same length as the switch-off phase. This results in a PWM frequency of approxi mately 60 Hz.

In the main program loop, the speed setpoint is constantly read in at ADC1. The actual value is read in at ADC2 during the off-phase (Pwm_Pin=0) and summed up. When the motor is switched on again, the average of the actual value is calculated.

To implement the PI controller, there is the constant Ti (integration time), together with the time constant of Timer1 and Kp (proportional gain), which must be adapted to the motor used. The interrupt time of Timer1 is set using the TCCR1 register:

TCCR1	Timer1 Interrupt
4	250 µs
5	500 µs
6	1 ms
7	2 ms

When Ti has expired (Timer1-Interrupt × Ti), the speed deviation is calculated, added to the previous value (taking into account the sign) and multiplied by Kp. The result is output directly as the new switch-on duration.

Control Using RI Compensation

Another practical solution can be what is known as RI compensation. As mentioned

at the beginning, the speed fluctuation of a DC motor is due to the ohmic resistance of its copper winding. If the current through the motor is measured, this resistance can be compensated. To do this, only the coil resistance of the motor needs to be known, which can be easily measured.

The circuit in Figure 9 is similar to that in Figure 6, except that the motor current is measured as a voltage drop across R5. R5 is to be dimensioned so that a maximum of 0.5 V is dropped across R5 at maximum motor current. The power dissipation in watts must be equal to R5 × motor current squared. Figure 10 shows a suggested layout for the motor control with RI compensation.

Figure 8: Proposal for a circuit board layout for the EMF control.

Figure 10: Proposed circuit board layout for the control with RI compensation.
Figure 9: The motor control with RI compensation differs only in one detail.
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see
text
ISP
RPM
+5V
+5V
MOSI
GND
Reset
SCK
MISO
+5V
+24V max.
+24V max.

X2
Power
PB5(RESET/ADC0)
PB3(ADC3) PB2(SCK-ADC1)
PB4(ADC2)
PB1(MISO)
PB0(MOSI)
IC1
ATtiny45
GND
VCC
4
1
2
3
8
7
6
5
1
3
5
2
4
6
SV1
C1
1n
X1
C2
100n
C3
100n
Motor
D1
1N4004
Q2
IRF4905
G
D
S
R1
R2
47k

R3
Q1
G
S
D
BS170
R4
R5
IC2
78L05
C4
100n
C5
100µ 35V
R6
10k
X3
C6
10µ
16V

Software II

The software for the RI compensation is also written in BASCOM. Timer0 is config ured as a PWM timer with a frequency of 245 Hz. In contrast to the EMF control, the control here is designed as a pure P controller. To do this, the coil resistance of the motor and the supply voltage must be known and specified as constants RM and U0 in the program.

The motor current is now measured during the switch-on phase of the PWM signal. The effective value of the current is calcu lated from the switch-on duration:

The duty cycle is then increased by the corresponding value.

Two Options

There are several ways to control a DC motor without a tachogenerator. Each of these options has different advantages and disadvantages:

> For the EMF control, a PI controller is required, the parameters of which
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10k
10k
10kmust be adapted to the motor used in order to optimize over- and under shoot. To do this, voltage fluctu ations in the supply voltage are compensated.
> With RI compensation, there are no overshoots or undershoots, but voltage fluctuations in the supply voltage are not compensated.

The schematics, layouts, and software for both controllers can be downloaded from the Elektor Labs project page at [1].
Translated by Jörg Starkmuth — 200486-01

About the Author

Rainer Schuster ’s fascination with electronics began at the age of 13, when he received the Philips EE1 electronics experiment kit from his parents for Christ mas in 1970. In September 1971, he bought his first issue of Elektor magazine and has remained loyal to it to this day. After study ing electrical engineering at the Munich University of Applied Sciences, he worked for 37 years as an engineer in electronics development at Agfa in Munich. He has been writing articles for Elektor since 2009. Now that he is retired, he also has his own YouTube channel (www.youtube.

com/@rainerschuster5722), where he posts his projects.

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[1] Elektor Labs page about this project: https://tinyurl.com/200486-01

[2] YouTube video: https://www.youtube.com/watch?v=6IEVBQyKIF4

WEB LINKS

Component List for RI Compensation Controller

Resistors:

R1, R6, R7 = 10 kΩ
R2 = 47 kΩ
R3 = 1 MΩ
R5 = see text

Capacitors:

C1 = 1 nF
C2…C4 = 100 nF
C5 = 100 µF/35 V
C6 = 10 µ/16 V

Semiconductors:

D1 = 1N4004
Q1 = BS170
Q2 = IRF4905
IC1 = ATtiny45
IC2 = 78L05

Miscellaneous:

SV1 = 2 × 3-pin header
X1,X2 = 2-pin PCB terminal, 5 mm pitch
X3 = 3-pin PCB terminal, 5 mm pitch

Component List for EMF Controller

Resistors:

R1, R4, R6, R7 = 10 kΩ

R2 = 47 kΩ
R3 = 1 MΩ
R5 = see text

Capacitors:
C1 = 1 nF
C2…C4 = 100 nF
C5 = 100 µF/35 V
C6 = 10 µF/16 V

Semiconductors:
D1 = 1N4004
Q1 = BS170
Q2 = IRF4905
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An e-zine subscriber never misses
the monthly ‘reverse project’

The MCU obviously requires a separate power supply that is independent of the EN input; due to the low-energy requirement, a linear regulator is the most economical solution here. In general, the concept is completely component-agnostic; the author likes to use modern PIC16F derivatives from Microchip.
Figure 2 shows the sub-circuit that informs the PIC when the SBC (OPI = Orange Pi) is supplied by the external switching regulator (EXT). D1a, R9 and D7a implement a more or less “classic” attenuator, which breaks down input voltages in the range of up to 20 V to a value that is “manageable” for the inputs of process computer and microcontroller.

Splitting the series resistor into the values R7 and R9 is necessary because single board computers sometimes become a low-impedance load or have a residual voltage when they are switched o" — without the resistor, this Single-board computers with Unix capability facilitate the development of complex control systems. Especially in scenarios with high demands on GUI and data process ing, they are superior to microcontrollers (MCUs). Unfortu nately, power consumption and real-time capability leave some room for improvement. But why not combine the best of both worlds? If you want to trim an o" -the-shelf single-board computer to be economical, you can achieve this with an eight-bitter as a partner. As an example, we want to implement a system that adheres to programmed downtimes and carries out an “alarm start” in response to a specific external event.

The Circuit Concept

In principle, the circuit works as shown in the flowchart (**Figure 1**). The voltage regulator acting as the main supply for the process computer (usually a switching regulator) is controlled by the microcontroller via its Enable input (EN).

By Tam Hanna (Hungary)

Raspberry Pis and other SBCs are ideal for sophisticated process control, but require signi! cantly more power than microcontrollers. Why not combine the best of both worlds? Here we show you how to get an 8-bit PIC to switch on a Raspberry Pi whenever it is needed.

8-Bit Companion for the Raspberry Pi

Power Saving Made Easy

▲ *Figure 1: This circuit design significantly reduces energy consumption in stand-by mode.*

▶

Figure 2: The R7 resistor can save both costs and headaches.

240210-002

PIC

GND

OPI

EXT

D7a

BZX84C2V7-TP
C13
100n
D1a
BAS21
R9
4k7
R7
1k
R8

100kwould cause the power management microcontroller (connected via the PIC terminal) to see strange or invalid values.

R7 is an additional protective element — the inputs of the process computer are connected to the supply voltage and ground via protective diodes. When very high voltage levels occur, R7 ensures that the current flowing into these diodes is limited and the process computer is not damaged — C13 and R8 provide a small additional debouncing function.

It should be noted that the circuit shown here with its EXT input was connected “directly” to the vehicle electrical system in various school buses. As there are now several thousands of such systems on the market without failures, it has been proven to work.

The role of diode D1a as reverse polarity protection is also helpful — please believe the author, who also works in the logistics sector, that connecting batteries the wrong way round is one of the classic “sports” of a mechanic.

The Software Is the Key

Communication via I2C is generally unproblematic (but don’t forget the necessary pull-ups). The “secret” of this system lies in the software. The PIC implements a kind of state machine that is based on the states shown in Figure 3.

The implementation of the shutdown process is of partic ular importance. Unixoid operating systems tend not to react very kindly to rough shutdowns. A convenient and practical way to solve the problem is to implement a countdown timer: The SBC activates this countdown and then starts the shutdown of the operating system. After the (generously dimensioned) period of time has elapsed, the process computer is “inertialized” and can

be disconnected from the power supply.
Of course, the PIC can also perform other tasks. In addition to storing serial numbers and other informa tion (in order to make it harder to manipulate), it is also possible, for example, to perform basic control tasks on the PIC. Of course, more complex implementations are also possible: A complex MSR task, for example, would make a 32-bit MCU appear reasonable as the second ary controller.

Practical Experience

Trackers based on the circuit concept shown here are now being used in tens of thousands by one of the author's customers, demonstrating the practical value of the design. Instead of a stand-by power consumption of around 200 mA, the system now gets by with just a few milliamperes. The author's AN4121, published by Microchip, is available at [1] and provides further infor mation on the topic.

Translated by Jörg Starkmuth — 240210-01

Questions or Comments?

Do you have questions or comments about this article? Email the author at tamhan@tamoggemon.com or contact Elektor at editor@elektor.com.

▲

Figure 3: Also helpful in the embedded sector: the state machine.

[1] Usha Ganesh and Tam Hanna, "Using PIC16F Microcontrollers for System Power Supply Control," Microchip Application Note AN4121, 2021: https://www.microchip.com/en-us/application-notes/an4121

WEB LINK

About the Author

Ing. Tam Hanna has been working with electronics, computers, and software for more than 20 years; he is a freelance developer, book author, and journalist (www.instagram.com/tam.hanna). In his spare time, Tam's interests include 3D printing and the distribution of cigars.

installation on the roof or engage in energy sharing with the owner of an installation at another location. For a communal instal lation, you need a two-thirds majority of the co-owners, good luck with that, I would say; as a tenant, you should try to convince your landlord eventually. And regarding

energy sharing, that is hardly appealing because it is complex, cumbersome and above all expensive. It is possible to have a small PV installation in Belgium, but you have to follow the same procedures as for traditional larger installations. With a "xed connection to a separate group in the distri bution cabinet, the necessary inspections and bureaucracy, the costs rise considerably, and your pro" ts melt like snow in the sun. However, there is light at the end of the tunnel and from May 2025, plug-in solar panels would — "nally — be allowed in Belgium after all. The question, of course, is how strict the conditions and modalities will be. With a bit of bad luck, you will have to be able to present an inspection report of your electrical installation, and you run the risk of having a “smart” meter shoved down your throat.

Belgians are rather risk-avoiding, and this is also re# ected at the policy and regula tory level. In my opinion, it would be better to ban extension cords with a power strip, electric bikes, electric scooters and hover boards. These have been in the news several times in the context of house "res and with the last two devices, you can have serious accidents too. I was reminded of this after last summer’s commotion around a well-known Belgian DIY store that had o$ ered plug-in solar panels with the best of intentions but had to remove them from its shelves again, to its shame.

Speed Camera

While in neighbouring countries “plug-in solar panels” have been used trouble-free for years (**Figure 1**), a Belgian user organi zation and sector federation for renewable energy ODE — apart from the fact that it is forbidden — seem to be particularly disliking of balcony PV installations [3]. According to them, these are potentially unsafe, which may have a short lifes

pan, and hardly financially interesting.
They have a clear preference for larger PV installations, including for #at dwellers.
The latter should just install a communal

By Ilse Joostens (Belgium)

I have read with interest the Elektor articles from 2021 and 2024 on balcony PV installations by Dr. Thomas Scherer [1] [2], and I am entirely convinced by the idea of covering your home's "quiescent power consumption" with solar energy. In Germany, you even get a subsidy for this; but unfortunately, I live in Belgium where this kind of installation is strictly forbidden by Synergrid technical regulation C10/11 due to — alleged — "re and electrocution danger.

From Life's Experience

Micromanagement

heating systems and which car we drive.
Similarly, the sale of numerous "hazard ous" substances to individuals has been restricted. Even lead-based solder is becom ing harder and harder to "nd, and there are already suppliers in Europe that no longer sell this stu$ to individuals because it contains lead. Just imagine working on older electronic equipment for the hobby.
This kind of micromanagement also curtails entrepreneurship because many companies start small, perhaps as a few students who have discovered a gap in the market and are working on a product in a garage (Figure 2).
Even giants like Microsoft, Google [6], HP and Amazon once started this way [7].
The website "Nanny State Index" [8] charts the patronization by various governments when it comes to eating, drinking, smoking, and vaping and, as far as I am concerned, may be expanded to include more criteria.
I dare to plead for less interference, fewer and clearer regulations and, above all, more

juridical certainty. Nobody can be against that.

Translated by Hans Adams — 240608-01

Politicians usually have a legal background and within that education one appar ently sees no point in ill-considered ad hoc legislation. They just act according to the delusion of the day or based on #ash politics, resulting in unclear “# ip-# op legis lation.” Premiums for electric cars have already been introduced and abolished twice, and because of twists and turns in the law, users of electric company cars who charge them at home will soon be allowed to pay a lot more taxes. Belgium does not have a monopoly on absurdities, and in the Netherlands I hear rumours about grid operators secretly increasing the voltage taps on district transformers to limit feed-in from solar panels. In Zeeland, an experi ment has even started where homeowners are asked to switch o$ their solar panels on sunny days for a fee. It shouldn’t get any crazier after years of pushing people to install solar panels anyway.

Patronizing

The government is increasingly interfer ing in all aspects of our lives, and unfortu nately this goes beyond energy, our home, That smart meter hasn’t been out of the news recently, "rst because of the virtual rollback or not for solar panel owners and later in the context of the introduction of the capacity tari$. With that tari$, your smart meter becomes more like a speed camera that mercilessly charges you every time you have a few too many devices powered on at once in a moment of inattention.

And the regulation on the roll-back counter, from which owners with solar panels could bene" t for another 15 years, was rejected by the Constitutional Court in 2021 because the Flemish government had gone beyond its authority. After "erce protests, the same

government was obliged to compensate the duped owners of solar panels.

Flipflop

You will no doubt be familiar with mathematician and computer scientist Edsger Dijkstra [4] who took issue with the excessive use of goto instructions in higher programming languages [5]. During my training, the ban on goto instructions was enforced to avoid an untidy “spaghetti code.”

[1] Dr. Thomas Scherer, “Balcony Power Plant,” Elektor 9-10/2021: https://www.elektormagazine.com/magazine/elektor-183/59831
[2] Dr. Thomas Scherer, “Optimizing Balcony Power Plants,” Elektor 1-2/2024: https://www.elektormagazine.com/magazine/elektor-324/62631
[3] VRT nws: Are solar panels on your balcony a good idea?: https://www.vrt.be/vrtnws/en/2022/10/18/are-solar-panels-on-your-balcony-a-good-idea/
[4] Wikipedia: Edsger Dijkstra: https://en.wikipedia.org/wiki/Edsger_W._Dijkstra
[5] Mathematics & Computer Science Centre: Edsger Dijkstra: Go To Statement Considered Harmful: https://homepages.cwi.nl/~storm/teaching/reader/Dijkstra68.pdf
[6] Inside Google’s original garage, 1998-style: https://blog.google/products/maps/inside-googles-original-garage-1998-style/
[7] Business Pundit: 11 famous garage startups that now rule the world: https://www.businesspundit.com/11-famous-garage-startups-that-rule-the-world/
[8] The Nanny State Index: https://nannystateindex.org/

WEB LINKS

Figure 2: Even large companies once started small. Source: Adobe Stock / Gorodenko" .

Figure 1: Balcony PV power plant — banned in one country, subsidized in another. Source: Adobe Stock / Ronald Rampsch.

Rectifiers — those are like diodes, right? Well, yes. But these are not the kind of diodes you’d use in your crystal radio. Or even for your Raspberry Pi power supply. Or even for that super-duper 200 W per channel amplifier you’ve been building. Think electric trains, subway systems, broadcast transmitters. BIG stu" . As Crocodile Dundee might say, ”That’s not a rectifier, THIS is a rectifier!”

Liquid Mercury

Mercury-Arc rectifiers make use of the fact that if a pool of liquid mercury with some mercury vapor is used as a cathode, an arc can be drawn from a carbon anode above it, but the process does not work the other way around.

Hence, rectification. This is su" iciently electronic to justify their inclu

sion in this column, even though they're not the kind of component that's ever been used in an Elektor project.

Mercury-arc rectifiers were invented in 1902 by Peter Cooper Hewitt, an American electrical engineer who had invented mercury vapor lamps (the forerunners of our fluorescent lamps) in 1901. They were developed in the early 1900s and rapidly became the go-to solution for high-voltage, high current rectification. The arc voltage is around 20…30 V, and the simplicity of their construction makes them e" icient and reliable. They were used up to the 1970s, when semiconductor rectifiers and thyristors that were up to the same job became available. Some were used until 2012. A typical 6-phase rectifier operating is shown in Figure 1.

Mercury Recti! ers

By David Ashton (Australia)

Before the advent of high-power semiconductor-based recti! ers, transforming alternating current to DC in industrial and transportation ! elds was no mean task! The devices were huge, fragile, contained highly polluting materials, and required frequent maintenance.

Figure 1: A 6-phase, high-power mercury-arc rectifying tube at work. (Source: Wikimedia Commons, https://commons.wikimedia.org/wiki/File:Quecksilberdampfgleichrichter_in_Betrieb.JPG)

Ignitor Electrode

Ignition has to be started by an ignitor electrode, which usually has to briefly come into contact with the mercury. This is done by a number of means, including electromagnets, bimetallic strips, etc. Once the arc has been struck to cause mercury vapor to form, rectification can take place.

Most mercury-arc rectifiers were 3 or 6-phase, but single-phase recti fiers needed an excitation electrode to keep the process going. The whole assembly is built within a large glass bulb, which allows the

Figure 2: Functional schematic of a mercury-arc rectifying tube (Source: Wikimedia commons, https://commons.wikimedia.org/w/index.php?curid=4577899)

mercury vapor to condense and flow back to the cathode pool. The construction of a typical rectifier is shown in Figure 2.

A typical 6-phase, 150 A rectifier was around 600 mm tall and about 300 mm round. Above 500 A steel tanks were used with ceramic insula tors for the electrodes, and these were rated up to several thousand amps. Ratings up to several kV were available, higher with special

construction techniques, but these required frequent maintenance. The mercury arcs emit a lot of ultraviolet light, you could get sunburned while working around them. Additionally, the noise from them and the associated transformers was considerable. Mercury is highly toxic and extensive clean-up work is often needed to remove traces of mercury when decommissioning them.

240624-01

Questions or Comments?

If you have technical questions or comments about this article, feel free to contact the Elektor editorial team by email at editor@elektor.com.

About the Author

David Ashton was born in London, grew up in Rhodesia (now Zimbabwe), lived and worked in Zimbabwe, and now lives in Australia. He has been interested in electronics since he was "knee-high to a grasshopper." Rhodesia was not the center of the electronics universe, so adapting, substituting, and scrounging components were skills he acquired early (and still prides himself on). He has run an electronics lab, but has worked mainly in telecommunications.

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Smart Grids: Enabling the Energy Transition

Solar Energy: Innovations Shaping the Future

The global solar energy market is on a positive growth trajectory as the solar energy industry is in a constant state of evolution. By 2030, installed renewable electricity generation capacity under the IRENA 1.5°C Scenario (see textbox on next page) is expected to more than double, with solar PV contributing 49% of the total capacity compared to 40% in 2023 [1]. This translates to an increase from 4,085 GW in 2023 to 11,173 GW by 2030, driven by annual additions averaging 558 GW per year.

Challenges and Opportunities

Achieving the 2030 targets will require robust innovation and investment. The solar sector's ability to sustain its current momentum hinges on continued advancements in technologies like bifacial panels, floating solar farms, and AI-optimized energy systems. These innovations will enhance e! iciency and integration, ensuring solar's key role in a clean energy future.

> Perovskite Solar Cells: These a! ordable and e! icient alternatives to silicon cells are transforming solar accessibility. Lab e! iciencies of up to 25% suggest they could become a cornerstone of future solar technologies.

> Transparent Solar Panels: Integrating photovoltaics into windows o! ers a revolutionary way to harvest energy without compromising aesthetics. Early-stage transparent panels are achieving e! iciencies around 10%.

> Floating Solar Farms: By utilizing water surfaces, floating solar farms optimize land use while benefiting from natural cooling, which enhances panel e! iciency.

> AI-Optimized Energy Systems: AI is transforming solar operations, helping precise energy prediction, smarter grid integration, and real-time optimization.

> Solar Skins: Customizable appearances for solar panels allow ideal integration into residential and commercial designs, addressing aesthetic concerns [5].

Global Solar Market: A Bright Outlook to 2030

Source: SolarPower Europe (2024), IRENA (2024)

Source: Bartz/Stockmar (M), CC BY 4.0

Global Installed Renewable Electricity Generation Capacity in the 1.5°C Scenario, 2023 and 2030 [1].

- Solar PV
- Hydro
- Wind
- Other RE

2023

4,085 GW

2030

11,173 GW

40%

4%
6%

49%

Yesterday
few large power plants
production
market
transmission
distribution
consumer
centralized, mostly national
based on large power lines
and pipelines
top to bottom
passive, only paying
Tomorrow
many small power producers
decentralized, ignoring
boundaries
including small-scale transmission
and regional supply compensation
both directions
active, participating in
the system
16 Bonus Edition January & February 2025 www.elektormagazine.com[1] SolarPower Europe, "Global Market Outlook," June 2024: https://tinyurl.com/solar-outlook-2024
[2] IRENA, "World Energy Transitions Outlook 2024: 1.5°C Pathway," November 2024: https://www.irena.org/Publications/2024/Nov/World-Energy-Transitions-Outlook-2024
[3] IRENA, Hydrogen: https://www.irena.org/Energy-Transition/Technology/Hydrogen
[4] Zurich, "How blue and green hydrogen can help solve the climate crisis," July 2024: https://www.zurich.com/media/magazine/2022/is-hydrogen-the-fuel-that-can-save-our-planet
[5] Tamesol, "The Future of Solar Energy," January 2024: https://tamesol.com/future-of-solar-energy/
WEB LINKS
240640-01
Green hydrogen production, conversion, and end uses. [3]
Another critical enabler has emerged for
sectors that are challenging to electrify,
such as heavy industry and long-haul

transport, and that one is hydrogen. According to IRENA, hydrogen could fulfill 12% of global energy demand under the 1.5°C Scenario [3], with applications spanning transport, power generation, and heating.

However, its production methods vary widely in environmental impact, earning the labels grey, blue, and green depending on the CO_2 emissions involved. Currently, 96% of global hydrogen production relies on fossil fuels (grey hydrogen), underscoring the need for a rapid transition to cleaner methods [4]. The high costs of production for green hydrogen, and substantial energy losses during production, storage, and conversion make it less e! icient than alternatives like batteries, while increasing blue hydrogen depends on costly carbon capture technologies.

Hydrogen: Main Ingredient for Decarbonization

12%

of global energy demand
could be fulfilled by hydrogen
under the 1.5°C Scenario.

96%

of current share of hydrogen
is produced from fossil fuels
(grey hydrogen).

What Is IRENA's 1.5°C Scenario?

IRENA stands for the International Renewable Energy Agency, an intergovernmental organization that promotes the adoption
and sustainable use of renewable energy worldwide. The IRENA 1.5°C Scenario in the World Energy Transitions Outlook
presents a pathway to achieve the 1.5°C climate target by 2050 [2]. Achieving this target requires substantial investments
in clean energy technologies, such as solar, wind, and storage, to decarbonize global energy systems.

Renewable energy

Electrolysis
Shipping
Trucks
Pipeline
Storage
Sustainable
CO2 capture
Synthetic
Fuels*
TRANSFORMATION
NO TRANSFORMATION
Green
ammonia
+

INDUSTRY

HEATING

POWER
GENERATION

CO2
+

N2

TRANSPORT

Chemical industry
Shipping
Refineries
Trucks
Aviation
Cars
Rail
Buses
Steel industry
January & February 2025 17This design addresses the need to monitor service interruptions, whether caused by technical issues — such as infrastructure mainte
nance — or by malicious intruders tampering with the external meter

switch to disconnect the power supply. Such an action could deplete the alarm system's backup batteries, leaving the home vulnerable. Triggering an alarm as soon as a disconnection is detected enhances overall home security.

To prevent unnecessary activations, a delay (or tolerance) time of a few seconds has been implemented. This helps avoid false alarms caused by brief interruptions. In addition to the basic version (see Table 1), the digital version o" ers enhanced features: it tracks mains voltage drop events, allows adjustment of alarm and delay times, and automatically deactivates the signal once the preset alarm duration has elapsed. Furthermore, by configuring two DIP switches on the PCB, you can enable a beep function and a power-restoration notification. These additional features will be discussed in detail later.

Di! erences Between the Analog and Digital Versions

Analog Version

As can be seen from the diagram in Figure 1, the power supply section has no transformer, which we will find in the digital version instead. **Therefore, greater care must be taken during testing, since the whole circuit is connected to the mains voltage, with danger of electrocution in case of contact!** In the case of the digital version, this danger is limited to the small part of the circuit connected to the primary of the transformer, **which nevertheless requires a high level of attention during the testing phases**!

After the AC rectification and 24 V DC limiting section, consisting of diodes D1…D4 diodes and Zener diode D5, we note the split of that voltage source into two leads. One heads to the D6-C2 series, the other goes to the base of Q1. The D6-C2 series network produces a stabilized

By Stefano Purchiaroni (Italy)

In areas where mains power is unstable and/or there may be safety issues, it may be useful to have a circuit that constantly monitors its presence and signals the outages in a timely manner to an external system. In this article, two design solutions are presented: one basic analog and a digital, microcontroller-based version, to monitor the presence of the power grid voltage at home and also perform the outages count.

Mains Power Outages

Table 1: Available Functions in analog and digital Version.

Function	Analog	Digital
Delay (tolerance time) against short interruptions	×	×
Delay time adjustment	-	×
Alarm stop after a preset time	-	×
Alarm time adjustment	-	×
Counting and display of outages number	-	×
Selectable *pulse* or *permanent* activation	×	×
Signaling of mains power return	-	×

will have to be implemented downstream of the circuit, or it must be part of the siren or other controlled device of choice.

In addition to permanent signaling, the *Pulse Mode* of about 2 s can be selected through the other position of switch SW1 (closed contacts 5-2 and 4-3). In the absence of mains voltage, C3 gradually discharges, reducing the voltage across the base of Q1 until it is brought into conduction. Q1 thus lets current flow from C2 to the relay, passing through C4. The relay is energized, activating the alarm.

After about half a second, C4 is fully charged, reducing the current flow on the relay coil until the relay is de-energized, approximately 2 s later. The values of the capacitors and resistors are already calculated to make sure that the charge of C2 can sustain the whole cycle. When the power returns, Q1 will go o" again, the relay will not change its state, and C2 will be charged once more and will be able to support new cycles.

Note the important function of diode D6 in this mode, which acts as a “check valve” preventing the base of Q1 from remaining high due to the accumulated charge in C2, and the relay from staying o" .

Digital Version

The digital version’s greater complexity is immediately apparent from the schematic in Figure 2. The circuit is supplied through a trans former with a 6 V output, which feeds two rectifier bridges, BR1 and BR2. The latter, followed by the stabilization section — consisting of C3, a small, 5 V linear voltage regulator U1 and C4 at the output — provides power for microcontroller U2, a versatile PIC16F1827 by Microchip. In the event of no mains voltage, 1.5 F supercapacitor C5 will continue to provide enough power to the PIC for a considerable time. Management of the supercapacitor is achieved by blocking diodes D2, D3 and D4, which isolate it during ordinary operation but ensure its charge.

23.3 V output, used to activate the relay via path 4-6 (steady mode) of the DPDT switch SW1. When the mains voltage fails, the relay returns to the o" position, thus closing the COM-NC contact. Please note: In the circuit diagram, the relay is drawn in its de-energized state, which means the alarm is on. This is valid only when SW1 is in *Steady Mode*, in the position represented on the schematic. In the other position of the switch (4-3/5-2/*Pulse Mode*) the relay gets energized just for 1 to 2 seconds (which means then the alarm is on).

When the mains voltage fails in *Steady Mode*, the alarm is activated with about a 3-to-4-second delay, due to the energy stored by the large electrolytic capacitor C2 being discharged. When power comes back on, the deactivation of the alarm will occur with about a 2 s delay, the time it takes C2 to charge and provide a high enough voltage to activate the relay again.

Capacitor C5, initially discharged, allows the relay to be instanta neously activated at full voltage, but once charged, the current to keep it activated is supplied through R5, and reduced slightly, yet remaining at a level more than enough to hold the relay contacts in the closed position. This technique greatly extends the life of the relay, which remains slightly underpowered most of the time.

The relay should be a DPDT type, with a 24 V coil and an internal resis tance of 1,600 Ω. Any mains disconnection that lasts less than the delay time mentioned earlier will not produce an alarm activation, since C2 will not have discharged enough to drop the voltage supplied to the relay below its Vo" , measured experimentally at around 4 V. This delay avoids unnecessary alarms in case short interruptions might occur.

In this analog version, the delay time is not adjustable. Another down side concerns the alarm time: Once C2 is discharged — and still no mains voltage is present at the input — the relay goes o" permanently,

leaving the alarm active indefinitely. Management of a maximum time
240559-003
RL1
24V
Alarm
Mains
0W5
1W
4x 1N4007
0W5
0W5
D3
D2
D1
D4
D5
24V
R1
1M
R2
820Ω
C1 470n
D6
1N4007
C2
2200µ
35V
C3
100µ
35V
C4
100µ
35V
C5
100µ
35V
R3
R4
4k7
R5
680Ω
Q1
BC557
D7

5V1
D8
1N4148
J2
J1
SW1
6
3
4
5
1
2
Figure 1: Schematic of the mains power outage analog version.

18kThe interrupts then wake the microcontroller for program execution every second, basically to count the seconds elapsed and decide if it is time to act on the relay — comparing the second counter with the reading of the two resistive trimmers RV1 and RV2.

A further reduction in power consumption is made possible by connect ing the hot side of the two trimmers not directly to the supply voltage, but to digital output pin RA2, which will be set to logic high level only during the reading of the two trimmers, taken via analog inputs AN3 and AN4 (pin 2 and 3 of U1, RA3, and RA4, respectively).

Mains voltage drop detection is done by the section starting at BR1, which has no high capacitance downstream, but is equipped with a circuit that generates 5.1 V when mains power is present.

Note jumper JP1, provided for removing and reprogramming of the PIC without it being powered by the supercapacitor. To avoid excessive voltage drops, diodes D2 and D4 were chosen to be Schottky types, with a direct threshold voltage VDS as little as 0.2 V. This allows C5 to be charged up to 4.8 V, and to get 4.6 V for the backup power supply to the PIC, which has a minimum operating voltage of only 2.8 V for the chosen model.

When the supercapacitor supplies the circuit, the reduction of the microcontroller's power consumption is achieved by software-enabling the "Nanowatt" mode, introduced by Microchip on most of its micro controllers. It sends the controller into a low-power state, where only the 32,768 Hz oscillator remains on, reactivating the code execution only at the interrupts coming from the timer associated with that oscillator.

X1 = 26+]
240559-007
TOL

ALM
BKBP
RESET
OnOff
Stat
+V1
+V2
6(16(

0W5
Mains
W04G
Alarm
+V1
3V
TP1
+V2
6(16(

+V1
RA5/MCLR
RA0
RA1
RA2
RA3
RA4
RA6
RA7
VSS
VDD
RB0
RB1
RB2
RB3
RB4
RB5
RB6
RB7
17
18
15
16
14
10
11
12
13
1
2
3
4
5
6
7
8
9
U1
U1 = PIC16F1827
C6
100n
RV1
22k

RV2
22k
DSW1
SW1
C7
22p
C8
22p
X1
R5
D5
Yellow
R7
D7
Red
R9
D9
Green
R6
4k7
Q1
BC547
R8
4k7
Q2
BC547
RL1
D8
1N4148
J2
BR2
W04G
BR1
TR1
J1
R1
R2
1k
R3
R4
22Ω
C1
47µ
16V

C2
100n
C3
1000µ
16V
C4
47µ
16V
C5
15)
5V5
D1
5V1
U2
78L05
D4
SB140
D2
SB140
D3
1N4007
JP1
D6
1N4148
Figure 2: Schematic of the microcontroller-based, digital design.

470Ω
470Ω
6V, 1VA5
22k
10k
470Ωvoid SetAlm() {
// Activate the alarm and count the event in EEPROM
// Activate the alarm
ALMOFF=0;
ALMON=1;
delay_ms(RlyTim);
ALMON=0;
curs = 0; // Reset the second counter
}
The following interrupt() function constitutes the entry-point of the PIC's interrupt service routine, ISR. It is invoked by the interrupt generated by Timer1 when the second expires, even in low-power mode. An output is provided on the circuit board on test point TP1

to verify with a frequency meter or oscilloscope the operation of the oscillator.
TP1's level toggles every second, producing a 0.5 Hz signal. The ground for the measurement is available on the respective GND-labeled test point. The main purpose of the interrupt procedure is to count the elapsed seconds using the 32-bit variable, curs. The interrupt for the next cycle is enabled again downstream of the function:

```
void interrupt() {
// Interrupt Service Routine.
// It is called every second by Timer1 overflow.
// --------- TMR1 ---------
// Manage Timer1 overflow (each 1s)
// to count seconds
if (PIR1.TMR1IF == 1) {
CLKOUT ^= 1; // Provide 0.5 Hz to Pin 1
// for checks
curs++; // Update the current
// second counter
TMR1H = TMR1H_INI; // Reload counter high byte
TMR1L = TMR1L_INI; // Reload counter low byte
PIR1.TMR1IF = 0; // Clear TMR1 Interrupt flag
}
}
```

After hardware setup and initialization of variables, main() function handles events according to the logic of a finite-state automaton.
The current state of the automaton is set in the Mode variable. First, pressing on the SW1 button is verified, to reset the event counter and for restarting the microcontroller via the reset assembler instruction. At the first power-up with a blank microcontroller, and only then, it will be necessary to press the SW1 button to set the alarm count in EEPROM to zero. At the execution of setup(), following the button press, it will also be forced to turn o" the alarm control relay, in case (for any reason) it had remained active.
In the event of an outage, the SENSE-tagged output voltage drops quickly, communicating the event to digital input pin RB1 (AN11), which interprets a voltage less than 0.8 V as a binary "0"; with the component values in this section, this threshold is reached about half a second after the mains voltage drop. By mounting optional resistor R3, this delay can be further reduced.
Based on the high or low level of pin RB1, the management software activates the alarm, according to the settings of the two potentiome ters RV1 and RV2, which allow you to adjust the delay time between 0…10 s, and the alarm time from 0…2 min.
As mentioned earlier, second-counting is handled by the PIC's internal

low-power oscillator, fitted with the small external 32,768 Hz watch crystal, X1. Again, to minimize power consumption, the relay chosen is a bistable, 3 V, double-coil DPDT type. The two sets of contacts are connected in parallel to increase the current carrying capacity, which, however, may not exceed 5 A.

The two turn-on and turn-o" coils are driven by Q1 and Q2 transistors, whose bases head to the PIC's RA6 and RA7 pins. The microcontroller will thus be able to turn the relay on and o" with short positive pulses on those pins. This chip is also connected to a dual DIP switch, which enables the two optional functions, *Beep* and *Back*.

The former limits the alarm on to about one second, to provide a brief but intense warning to those in the house, for example, alert ing them to the voltage drop without disturbing the neighborhood. The *Back* function provides two short pulses to indicate the return of mains voltage. However, this function is limited by the maximum energy delivery time provided by supercapacitor C5, which is about a couple of hours.

Finally, we note button SW1 and LED D5. The latter has the task of using short flashes to indicate the drop events that have occurred. If, for example, a power failure has occurred twice, D5 will cycle two flashes, followed by a pause of about 3 s.

To reset the count, simply press the *Reset* button SW1. This switch also performs a full restart of the PIC, and a forced disable of the relay, which is useful in case of problems. The two LEDs, D7 and D9, indicate the output of the short command to enable and disable the relay, which, if not followed by the clicking sound of the relay, help to identify a failure of this electromechanical component.

Software

Let us focus on the main functions, SetAlm(), interrupt(), and main(). The SetAlm function shown below provides for the activa tion of the alarm device connected to J2 output terminals by direct pulses to the bistable relay. The persistence time of the pulse to the relay control coils is defined by the constant RlyTim, currently set to 200 ms. The coils head to pins RA6 and RA7 of the microcontroller, which energizes them through Q1 and Q2 transistors.


```
// the MCU is powered just by supercap!
curs = 0; // Start seconds count
STSLED = 0; // Force Ststus Led off
Mode = Mode_TOL;
// Enter the Tolerance Mode
}
break;
```

In the Mode_TOL state handled by the following section, one of two

possible events is awaited: the return of mains voltage before the delay time expires, to return again to the Mode_SBY state, or the overrun of that time.
The condition to be met for the latter case is slightly complicated by the management of the optional *Beep* mode activated via the first of the two DIP switches. Depending on the state of this switch, either the ttol limit time defined first by the RV1 trimmer reading, or the MinTol time set by the initial code definitions, corresponding to 2 s, will be selected. Exceeding the limit time brings the automaton into the Mode_ALM state.
The continuation of the code is always bound to the Timer1 interrupt, since it continues to operate in low-power mode:

```
case Mode_TOL: // Waiting ttol time
// before activating the alarm
if (POWER == 1) { // Mains is back
// before the alarm activation
Mode = Mode_SBY; // Just go
// back to Standby Mode
} else { // Check end
// of Tolerance time
if ( ((BeepMode==FALSE)&&(curs>=ttol))
||((BeepMode==TRUE)&&(curs>=MinTol)) ) {
SetAlm(); // Start the
// alarm,
IncAlm(); // Increment
// the alarms counter,
Mode = Mode_ALM; // Enter in
// the Alarm Mode
}
}
break;
```

This part handles the Mode_ALM state. It waits for the mains voltage to return, to reset the alarm and return to Standby by permanently exiting the low-power mode. Or one waits for the exhalation of the maximum alarm time, chosen from the talm value set by the analog reading of the RV2 trimmer, or from the MinAlm value preset to 1 s at the beginning of the program. It remains in low power in that case, to handle the return of the line voltage to the Mode_BACK state:

```
case Mode_ALM: // Wait talm seconds before
```

Alarm activation events are counted in the AlmCnt variable. Note that — in case the return of mains voltage is very late and the capacity to support operations provided by supercapacitor C5 is exceeded — in order not to lose the alarm count, the value of AlmCnt is saved in EEPROM. The setup() function requires it to be read again when the

microcontroller is restarted:

```
void main() {
setup(); // Initialization
while(1) { // Forever Loop
if (Button(&PORTB,4,1,0)){
// Reset button pressed
STSLED = 1;
Delay_ms(500);
STSLED = 0;
AlmCnt = 0;
EEPROM_Write(CNTADDR, AlmCnt);
// Raz the Alarms counter in EEPROM
curms = 0;
// Raz the elapsed ms for Blink cycle
BlkSts = 0; // Reset the Blink automaton
{asm{reset}}; // Reset the MCU
// (the program will restart)
}
```

In the following excerpt, the voltages on the analog pins connected to the slider of the two resistive trimmers are read; they are dedicated to adjusting the delay and alarm times. The reading is made possible by activating the hot side of the two trimmers via the digital output pin RA2, referred to here as DIVPOW.

Since the microcontroller has a 10-bit A/D converter, the two readings will consist of a value between 0 and 1,023, between limits defined by configurable parameters that by default limit the delay time to between 0…10 seconds, and the alarm time to between 0…2 minutes.

In default state Mode_SBY, managed by the block that follows, the automaton waits for the mains voltage drop event, communicated by the SENSE line through pin RB1 (AN11) referred to here using the POWER definition. If it goes to logic level 0, then second-counting will start, setting the PIC to low-power mode. Please keep in mind that from then on, power is provided solely by supercapacitor C5.

The new state is Mode_TOL:

```
// Automaton
switch (Mode) {
case Mode_SBY: // Nominal Mode.
// Wait for a Power Down event
if (POWER == 0) { // The Main power gone down,
```



```
if ( ((BeepMode==FALSE)&&(curs>=talm))
||((BeepMode==TRUE)&&(curs>=MinAlm)) ) {
ResetAlm();     // Suspend the alarm
Mode = Mode_BACK; // Wait for the
```

```
// Power Up event
}
}
break;

// to stop the alarm
if (POWER == 1) { // Mains is back during Alarm
ResetAlm(); // Stop the alarm
if (BackMode==TRUE) Signal();
// Signal "Mains is back" if requested
Mode = Mode_SBY; // Manage the Power Up event
} else {    // Check end of Alarm time
```

Listing 1: Main Blink Sequence and Mains Monitoring Routine.

```
// On power presence, signal the occurred alarms (one blink per each alarm)
if ((POWER == 1) && (AlmCnt > 0)) {
switch (BlkSts) {
case 0: // Initialize a new Blinks cycle
n = AlmCnt;
STSLED=1;
curms = 0; // Start ms counting
BlkSts = 1; // Go to "Wait to turn off the LED"
break;
case 1: // Wait CNTBLINK ms to turn off the LED
if (curms >= CNTBLINK) {
STSLED=0;
n--; // Decrement residual Blinks counter
curms = 0; // Start ms counting
if (n > 0) BlkSts = 2; // Go to "Wait to turn on the LED"
else BlkSts = 3; // Go to "Wait for next Blinks cycle"
}
break;
case 2: // Wait CNTBLINK ms to turn on the LED
if (curms >= CNTBLINK) {
STSLED=1;
curms = 0; // Start ms counting
BlkSts = 1; // Go to "Wait to turn off the LED"
}
break;
case 3: // Wait CNTINTERV for next Blinks cycle
if (curms >= CNTINTERV) {
curms = 0; // Start ms counting
BlkSts = 0; // Initialize a new cycle
}
```

```
break;
}
if (BlkSts > 0) curms += TIC; // Increment the elapsed time counter (ms)
}
#ifdef LOWPOW
// If no external power is present, go in Low Power Mode
if (POWER == 0) {asm{sleep};} // Sleep. Awake on Timer1 interrupt.
#endif
Delay_ms(TIC); // Introduce a cycle delay
```

The 1.5 F supercapacitor is a special component, but nevertheless readily available. In this version, the alarm output is provided via a three-way terminal, which allows the user to choose NC or NO activa tion type, depending on the intended use. This is not possible in the analog version, due to circuit limitations.

The digital version thus o" ers greater versatility and ease of use than the analog one, thanks to the ability to configure the alarm output according to one's needs. However, the analog version retains a struc tural simplicity that may be advantageous in some specific applica tions. The choice between the two versions will therefore depend on the user's needs and the features of the signaling system to which the device will be connected.

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Questions or Comments?

Do you have technical questions or comments about this article? You may write to the author at info@purchiaroni.com or to Elektor's editorial team at editor@elektor.com.

About the Author

Passionate about electronics and programming, Stefano Purchiaroni shares his works by publishing projects, and also o" ers free robotics lessons for teens at a popular school. He is currently employed in Telespazio and works in a satellite center near the Italian capital.

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In Mode_BACK, it waits for the mains voltage to return and signals the event by triggering the alarm for two short consecutive pulses if provided by the *Back* DIP switch. Until the grid returns, the PIC is left in low-power mode:

```
case Mode_BACK: // Waiting for the mains power
// to come back again
if (POWER == 1) { // Mains
// is back: exit to Standby mode
ResetAlm(); // Force
```

```
// alarm off
if (BackMode==TRUE) Signal();
// Signal "Mains is back" if requested
Mode = Mode_SBY;
}
break;
```

After the main automaton, a second four-state automaton was implemented just to manage D5 connected to RA0.

This LED is intended to show the current count of voltage drop events of duration longer than the delay time. The AlmCnt counter is reset table by pressing SW1, managed in the first lines of code of the main cycle, seen above. The handling of flashes by an automaton is dictated by the need to not interrupt the main cycle with simple delays, which would block any other actions during their execution. Flashing times are defined by the constants CNTBLINK set to 200 ms, and CNTINTERV, which defines the pause between two blocks of flashes, set to 3 s (**Listing 1**).

Printed Circuit Boards

For both the analog and digital versions, two single-sided, jumperless printed circuit boards have been designed. This will undoubtedly facilitate their creation using the classic methods of photoengraving, or hot transfer. You can download the Gerber files needed for DIY from the Elektor Labs page for this article [1].

Assembly

In the analog version shown in the assembly plan, the SW1 switch for mode selection is wired to a six-way connector on the printed circuit board. You can connect a lever switch to it, or any DPDT switch. The digital version of the device, which can be seen in the mounting plan, involves socket-mounting the microcontroller, two miniature-type trimmers, a two-way dip-switch, and a jumper.

[1] Elektor Labs page for this article: https://elektormagazine.com/labs/mains-power-outages-monitor

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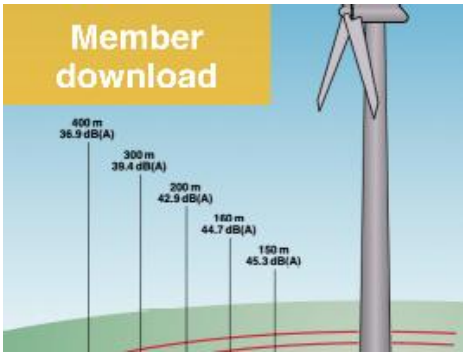

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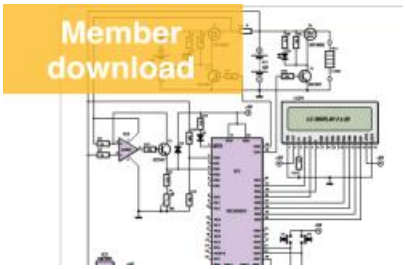

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Solar battery chargers store the energy obtained from the sun in batteries. The author has developed a system that charges the battery according to the manufacturer's specifications and protects against deep discharge. The system displays all important operating parameters on an LC display. According to the manufacturer's specifications, the peak power of the solar module used here is 150 W at 14.5 V. In practice, the current after deducting all losses is a maximum of 7.5 A.

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Search data outside the Azure platform in Azure AI Search using Azure Data Factory

- Completed on 5/3/2024

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Build an Azure Machine Learning custom skill for Azure AI Search

- Completed on 5/3/2024

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Implement advanced search features in Azure AI Search

- Completed on 5/3/2024

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Enrich your data with Azure AI Language

- Completed on 5/3/2024

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Create a knowledge store with Azure AI Search

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Create an Azure AI Search solution

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[Create a custom skill for Azure AI Search]

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[Get started with Data Activator in Microsoft Fabric]

- Completed on 3/19/2024

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Get started with Real-Time Analytics in Microsoft Fabric

- Completed on 3/19/2024

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Administer Microsoft Fabric

- Completed on 3/19/2024

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Create and manage a Power BI deployment pipeline

- Completed on 3/19/2024

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Load data into a Microsoft Fabric data warehouse

- Completed on 3/19/2024

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Organize a Fabric lakehouse using medallion architecture design

- Completed on 3/19/2024

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Ingest data with Spark and Microsoft Fabric notebooks

- Completed on 3/19/2024

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Detect objects in images

- Completed on 3/12/2024

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Classify images

- Completed on 3/12/2024

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Analyze video

- Completed on 3/12/2024

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Read Text in images and documents with the Azure AI Vision Service

- Completed on 3/12/2024

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Detect, analyze, and recognize faces

- Completed on 3/12/2024

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Image classification with custom Azure AI Vision models

- Completed on 3/12/2024

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Badge

[Enhance teaching and learning with Microsoft Copilot]

- Completed on 2/14/2024

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[Equip and support learners with AI tools from Microsoft]

- Completed on 2/14/2024

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[Teach cybersecurity concepts with Minecraft Education]

- Completed on 2/14/2024

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Lead forward: Integrate the best strategies from remote, hybrid, and blended learning for school leaders

- Completed on 1/16/2024

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Build a question answering solution

- Completed on 1/16/2024

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Analyze text with Azure AI Language

- Completed on 1/16/2024

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Translate speech with the Azure AI Speech service

- Completed on 1/16/2024

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Create speech-enabled apps with Azure AI services

- Completed on 1/16/2024

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Translate text with Azure AI Translator service

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Create a custom named entity extraction solution

- Completed on 1/16/2024

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Create a custom text classification solution

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Build a question answering solution

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Extract insights from text with the Azure AI Language service

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Build a conversational language understanding model

- Completed on 1/16/2024

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Custom named entity recognition

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Get started with the SharePoint Framework

- Completed on 12/28/2023

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Use Change Notifications and Track Changes with Microsoft Graph

- Completed on 12/28/2023

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Access Files with Microsoft Graph

- Completed on 12/28/2023

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Manage Group Lifecycle with Microsoft Graph

- Completed on 12/28/2023

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Access User Data from Microsoft Graph

- Completed on 12/28/2023

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[Optimize network traffic with Microsoft Graph]

- Completed on 12/28/2023

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[Optimize data usage when using Microsoft Graph with query parameters]

- Completed on 12/28/2023

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[Get started with Microsoft Graph Toolkit]

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[Access user photo information by using Microsoft Graph]

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[Configure a JavaScript application to retrieve Microsoft 365 data by using Microsoft Graph]

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What is Microsoft Graph?

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Introduction to customizing and extending SharePoint

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Introduction to building apps for Microsoft Teams

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Understand Actionable Messages in Outlook fundamentals

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Automate Microsoft Defender for Cloud Apps with Power Automate

- Completed on 12/18/2023
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Discover additional resources for Microsoft Defender for Cloud Apps

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Configure advanced scenarios in Microsoft Defender for Cloud Apps

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Leading for equity 101—Prepare your school for equity

- Completed on 12/18/2023

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Explore identity synchronization

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Manage secure user access in Microsoft 365

- Completed on 12/16/2023

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Manage synchronized identities

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Implement directory synchronization tools

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Prepare for identity synchronization to Microsoft 365

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[Prevent data loss]

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[Analyze your Microsoft 365 workplace data using Microsoft Viva Insights]

- Completed on 12/16/2023

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[Deploy Microsoft 365 Apps for enterprise]

- Completed on 12/16/2023

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[Manage tenant health and services in Microsoft 365]

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[Configure administrative roles in Microsoft 365]

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Capture Web Application Logs with App Service Diagnostics Logging

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Improve incident response with alerting on Azure

- Completed on 12/15/2023

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Analyze your Azure infrastructure by using Azure Monitor logs

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Write multi-table queries by using Kusto Query Language

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Gain insights from your data by using Kusto Query Language

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Write your first query with Kusto Query Language

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Explore the fundamentals of data analysis using Kusto Query Language (KQL)

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Generate batch predictions using a deployed model in Microsoft Fabric

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Train and track machine learning models with MLflow in Microsoft Fabric

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Preprocess data with Data Wrangler in Microsoft Fabric

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Explore data for data science with notebooks in Microsoft Fabric

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Get started with data science in Microsoft Fabric

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Get started with data warehouses in Microsoft Fabric

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Ingest Data with Dataflows Gen2 in Microsoft Fabric

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Use Data Factory pipelines in Microsoft Fabric

- Completed on 12/15/2023

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[Work with Delta Lake tables in Microsoft Fabric]

- Completed on 12/15/2023

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[Use Apache Spark in Microsoft Fabric]

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[Get started with lakehouses in Microsoft Fabric]

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Introduction to end-to-end analytics using Microsoft Fabric

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Manage leads with Dynamics 365 Sales

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Set up and configure Dynamics 365 Sales

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Get started with Dynamics 365 Sales

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Automate Power BI solution management

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Enforce data permissions for Power BI embedded analytics

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Integrate content with Power BI client APIs

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Assess and convert SQL Server databases using the Data Migration Assistant (DMA)

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SQL Server Discovery using the Microsoft Assessment and Planning (MAP) toolkit

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Use the SQL Server Query Tuning Assistant

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Test and optimize SQL Server databases using the Database Experimentation Assistant (DEA)

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Assess SQL Server databases for migration to Azure SQL

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Migrate on-premises workloads to Azure

- Completed on 11/20/2023

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Prepare on-premises workloads for migration to Azure

- Completed on 11/20/2023

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[Design your migration to Azure]

- Completed on 11/20/2023

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[Migrate VMware resources on-premises to Azure VMware Solution]

- Completed on 11/20/2023

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[Prepare to migrate VMware resources to Azure by deploying Azure VMware Solution]

- Completed on 11/20/2023

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[Introduction to Azure VMware Solution]

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[Using Azure NetApp Files with Azure VMware Solution]

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[Secure outbound internet connectivity for Azure VMware Solution]

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Deploy disaster recovery using VMware Site Recovery Manager and Azure VMware Solution

- Completed on 11/20/2023

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Implement business continuity, disaster recovery, and backup for SAP HANA on Azure (Large Instances)

- Completed on 11/20/2023

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Monitor and troubleshoot SAP HANA on Azure (Large Instances)

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Manage SAP HANA on Azure (Large Instances)

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Implement and deploy SAP HANA on Azure (Large Instances)

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Examine backup security licensing and support considerations for SAP HANA on Azure (Large Instances)

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Plan SAP HANA on Azure (Large Instances) high availability and disaster recovery

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Examine SAP HANA on Azure (Large Instances) sample architecture

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Identify SAP HANA on Azure (Large Instances) certified offerings

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Design a data storage solution for relational data

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Design a data storage solution for non-relational data

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Scope report design requirements

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[Manage Power BI assets by using Microsoft Purview]

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[Catalog data artifacts by using Microsoft Purview]

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[Discover trusted data using Microsoft Purview]

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Introduction to Microsoft Purview

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Integrate Microsoft Purview and Azure Synapse Analytics

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Use Delta Lake in Azure Synapse Analytics

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Transform data with Spark in Azure Synapse Analytics

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Analyze data with Apache Spark in Azure Synapse Analytics

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Challenge project - Create Microsoft Power Platform solutions

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Design a semantic model in Power BI

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Choose a Power BI model framework

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Add calculated tables and columns to Power BI Desktop models

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Add measures to Power BI Desktop models

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Write DAX formulas for Power BI Desktop models

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Clean, transform, and load data in Power BI

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Get data in Power BI

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Explore data analytics at scale

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Understand concepts of data analytics

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Explore Azure data services for modern analytics

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Secure data and manage users in Azure Synapse serverless SQL pools

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Create a lake database in Azure Synapse Analytics

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Use Azure Synapse serverless SQL pools to transform data in a data lake

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Use Azure Synapse serverless SQL pool to query files in a data lake

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[Load data into a relational data warehouse]

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[Analyze data in a relational data warehouse]

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[Secure a data warehouse in Azure Synapse Analytics]

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Manage and monitor data warehouse activities in Azure Synapse Analytics

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Build a Power Apps component

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Apply basic performance optimization in finance and operations apps

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[Build reports for finance and operations apps]

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[Create classes in finance and operations apps]

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[Build forms and optimize form performance in finance and operations apps]

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Build data models in finance and operations apps

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Build extended data types and enumerations for finance and operations apps

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[Develop object-oriented code in finance and operations apps]

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[Get started with development using X++ in finance and operations apps]

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[Start developing for finance and operations apps by using Visual Studio]

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[Create serverless logic with Azure Functions]

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[Expose hybrid services securely with Azure Relay]

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[Implement message-based communication workflows with Azure Service Bus]

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[Choose a messaging model in Azure to loosely connect your services]

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[React to state changes in your Azure services by using Event Grid]

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[Enable reliable messaging for Big Data applications using Azure Event Hubs]

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[Communicate between applications with Azure Queue storage]

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[Work with Azure Blob storage]

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[Manage the Azure Blob storage lifecycle]

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[Explore Azure Blob storage]

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[Explore Azure App Service deployment slots]

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Manage alerts, blameless retrospectives and a just culture

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Develop monitor and status dashboards

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[Implement tools to track usage and flow]

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[Manage Git repositories]

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[Collaborate with pull requests in Azure Repos]

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[Manage Git branches and workflows]

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[Structure your Git Repo]

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Introduction to data protection and privacy

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Discover the potential of Azure for government

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Support data classification with private and hybrid clouds

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Describe the identity protection and governance capabilities of Microsoft Entra

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Describe access management capabilities of Microsoft Entra ID

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Describe the authentication capabilities of Microsoft Entra ID

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Describe the function and identity types of Microsoft Entra ID

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Describe security and compliance concepts

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Describe analytics capabilities of Microsoft 365

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Describe endpoint modernization, management concepts, and deployment options in Microsoft 365

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Describe collaboration solutions of Microsoft 365

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Describe productivity solutions of Microsoft 365

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Use Azure AI Services for Language in a Microsoft Copilot Studio bot

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Set up a Microsoft Copilot Studio bot for voice

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Manage Power Virtual Agents

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Build effective bots with Microsoft Copilot Studio

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Enhance Microsoft Copilot Studio bots

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Work with entities and variables in Microsoft Copilot Studio

- Completed on 11/19/2023

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Manage topics in Microsoft Copilot Studio

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Get started with Microsoft Copilot Studio bots

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[Create calculation groups]

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[Use DAX time intelligence functions in Power BI Desktop models]

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[Create Power BI model relationships]

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[Use tools to optimize Power BI performance]

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[Enforce Power BI model security]

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[Publish and share in Power BI]

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[Explore data in Power BI]

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[Use visuals in Power BI]

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Get started building with Power BI

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Discover data analysis

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Operate a guide in Dynamics 365 Guides

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Dynamics 365 Guides for administrators

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Embed 21st century skills with 21st century learning design

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Deepen educational experiences with the 21CLD ICT for learning dimension

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Develop learner executive function with the 21CLD self-regulation dimension

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Improve communication skills with the 21CLD skilled communication dimension

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Innovate learning with the 21CLD real-world problem solving and innovation dimension

- Completed on 11/19/2023

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Badge

Practice collaborative skills with the 21CLD collaboration dimension

- Completed on 11/19/2023

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Badge

Develop critical thinking skills with the 21CLD knowledge construction dimension

- Completed on 11/19/2023

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Badge

Transform learning with 21st century learning design

- Completed on 11/19/2023

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Badge

[Set up number series and trail codes in Dynamics 365 Business Central]

- Completed on 11/18/2023

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Badge

[Set up general ledger configuration options in Dynamics 365 Business Central]

- Completed on 11/18/2023

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Badge

[Set up inventory replenishment in Dynamics 365 Business Central]

- Completed on 11/18/2023

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Badge

[Plan items in Dynamics 365 Business Central]

- Completed on 11/18/2023

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Badge

[Set up inventory planning in Dynamics 365 Business Central]

- Completed on 11/18/2023

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Badge

Demand Driven Material Requirements Planning in Dynamics 365 Supply Chain Management

- Completed on 11/18/2023

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Use master planning in Dynamics 365 Supply Chain Management

- Completed on 11/18/2023

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Set up Master Planning in Dynamics 365 Supply Chain Management

- Completed on 11/18/2023

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Create bill of materials in Dynamics 365 Supply Chain Management

- Completed on 11/18/2023

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Create products and product masters in Dynamics 365 Supply Chain Management

- Completed on 11/18/2023

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Use inventory reports in Dynamics 365 Supply Chain Management

- Completed on 11/18/2023

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Configure and work with inventory management in Dynamics 365 Supply Chain Management

- Completed on 11/18/2023

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Get started with Dynamics 365 Supply Chain Management

- Completed on 11/18/2023

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Introduction to scripting in PowerShell

- Completed on 11/18/2023

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Write your first PowerShell code

- Completed on 11/18/2023

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Connect commands into a pipeline

- Completed on 11/18/2023

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Badge

Discover commands in PowerShell

- Completed on 11/18/2023

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Badge

[Introduction to PowerShell]

- Completed on 11/18/2023

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Badge

[Write your first program in C++]

- Completed on 11/18/2023

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Badge

[Create a Bot with the Bot Framework Composer]

- Completed on 11/17/2023

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[Create a bot with the Bot Framework SDK]

- Completed on 11/17/2023

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Badge

[Deploy Azure AI services in containers]

- Completed on 11/17/2023

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Badge

Monitor Azure AI services

- Completed on 11/17/2023

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Badge

Secure Azure AI services

- Completed on 11/17/2023

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Badge

Create and consume Azure AI services

- Completed on 11/17/2023

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Prepare to develop AI solutions on Azure

- Completed on 11/17/2023

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Badge

Understand the MySQL storage engine

- Completed on 11/17/2023

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Understand client-server communication in MySQL

- Completed on 11/17/2023

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Explore MySQL Architecture

- Completed on 11/17/2023

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Understand concurrency in MySQL

- Completed on 11/17/2023

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Secure MySQL

- Completed on 11/17/2023

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Beneath the surface: Device details for IT administrators

- Completed on 11/17/2023

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Analyze DevOps Continuous Planning and Continuous Integration

- Completed on 11/15/2023

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Route system feedback to development teams

- Completed on 11/15/2023

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Explain DevOps Continuous Delivery and Continuous Quality

- Completed on 11/15/2023

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Characterize DevOps Continuous Collaboration and Continuous Improvement

- Completed on 11/15/2023

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Introduce the foundation pillars of DevOps: Culture and Lean Product

- Completed on 11/15/2023

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Assess your existing software development process

- Completed on 11/15/2023

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Manage Agile software delivery plans across teams

- Completed on 11/15/2023

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Choose an Agile approach to software development

- Completed on 11/15/2023

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Introduction to Azure DevOps

- Completed on 11/15/2023

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Introduction to Git

- Completed on 11/15/2023

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Badge

Edit code through branching and merging in Git

- Completed on 11/15/2023

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Badge

[Collaborate with Git]

- Completed on 11/15/2023

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[How to create and modify a Git project]

- Completed on 11/15/2023

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Enhance creativity to advance learning with Windows 11 and Microsoft 365 tools

- Completed on 11/14/2023
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Increase productivity with Office, OneNote, and Edge browser in Windows 11

- Completed on 11/14/2023
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Build community with Teams and OneNote

- Completed on 11/14/2023
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Transition to and prepare for fundamentals-level security, compliance, and identity course

- Completed on 11/14/2023

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Develop search strategies with Search Coach and Search Progress

- Completed on 11/14/2023

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Perform hyperparameter tuning with Azure Machine Learning

- Completed on 11/14/2023

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Track model training with MLflow in jobs

- Completed on 11/14/2023

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Run a training script as a command job in Azure Machine Learning

- Completed on 11/14/2023

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Deploy a model to a batch endpoint

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Deploy a model to a managed online endpoint

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Run pipelines in Azure Machine Learning

- Completed on 11/14/2023

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Find the best classification model with Automated Machine Learning

- Completed on 11/14/2023

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Make data available in Azure Machine Learning

- Completed on 11/14/2023

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Build a machine learning model

- Completed on 11/14/2023

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Data collection and manipulation

- Completed on 11/14/2023

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Introduction to rocket launches

- Completed on 11/14/2023

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Digital citizenship: Prepare today’s learners for online success

- Completed on 11/14/2023

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Extract invoice data with AI Builder’s prebuilt model

- Completed on 11/14/2023

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[Automate the processing of documents with the AI Builder prepackaged solution]

- Completed on 11/14/2023

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[Manage models in AI Builder]

- Completed on 11/14/2023

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Get started with AI Builder

- Completed on 11/14/2023

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Use text generation in AI Builder

- Completed on 11/14/2023

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Introduction to expressions in Power Automate

- Completed on 11/14/2023

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Upload, download, and manage data with Azure Storage Explorer

- Completed on 11/13/2023

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Control access to Azure Storage with shared access signatures

- Completed on 11/13/2023

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Configure Azure Storage with tools

- Completed on 11/13/2023

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Configure Azure Files and Azure File Sync

- Completed on 11/13/2023

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Configure Azure Storage security

- Completed on 11/13/2023

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Find commands and Get-Help in Windows PowerShell

- Completed on 11/13/2023

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Understand the command syntax in Windows PowerShell

- Completed on 11/13/2023

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Review Windows PowerShell

- Completed on 11/13/2023

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Manage mail flow rules

- Completed on 11/13/2023

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Badge

Troubleshoot mail flow

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Manage mail flow

- Completed on 11/13/2023

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Troubleshoot audio, video, and client issues

- Completed on 11/13/2023

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Badge

[Configure auto attendants and call queues]

- Completed on 11/13/2023

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[Configure and manage voice users]

- Completed on 11/13/2023

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Badge

[Configure and deploy Teams Phone]

- Completed on 11/13/2023

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[Plan for Teams Phone]

- Completed on 11/13/2023

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Badge

[Configure, deploy, and manage Teams devices]

- Completed on 11/13/2023

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Badge

[Plan for Microsoft Teams Rooms and Surface Hub]

- Completed on 11/13/2023

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[Manage meetings and events experiences]

- Completed on 11/13/2023

Badge

[Introduction to Teams meetings and calling]

- Completed on 11/13/2023

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Monitor your Microsoft Teams environment

- Completed on 11/13/2023

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Implement lifecycle management and governance for Microsoft Teams

- Completed on 11/13/2023

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Plan and deploy Microsoft Teams

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Explore Microsoft Teams

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Examine Azure Identity Protection

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Examine Privileged Identity Management

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Examine Microsoft Secure Score

- Completed on 11/13/2023

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Explore security solutions in Microsoft 365 Defender

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Explore the Zero Trust security model

- Completed on 11/13/2023

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Examine threat vectors and data breaches

- Completed on 11/13/2023

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Use OneDrive in Microsoft 365

- Completed on 11/13/2023

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Configure client connectivity to Microsoft 365

- Completed on 11/13/2023

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[Add a custom domain in Microsoft 365]

- Completed on 11/13/2023

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[Manage groups in Microsoft 365]

- Completed on 11/13/2023

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Badge

[Manage users, licenses, and mail contacts in Microsoft 365]

- Completed on 11/13/2023

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Badge

Configure your Microsoft 365 experience

- Completed on 11/13/2023

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Badge

Implement compliance for Microsoft Teams

- Completed on 11/13/2023

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Implement security for Microsoft Teams

- Completed on 11/13/2023

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Badge

[Manage access for external users]

- Completed on 11/13/2023

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Badge

[Plan and configure network settings for Microsoft Teams]

- Completed on 11/13/2023

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Support social and emotional learning with Microsoft tools

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Keep students engaged: Build strong student/teacher connections in a remote learning environment

- Completed on 11/12/2023

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Stay connected with remote learning through Microsoft Teams and Office 365

- Completed on 11/12/2023

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Hybrid learning in the primary classroom

- Completed on 11/12/2023

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Hybrid learning: A new model for the future of learning

- Completed on 11/12/2023

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Hybrid learning for the adolescent learner

- Completed on 11/12/2023

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Hybrid learning in the intermediate classroom

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Accessibility, special education, and online learning: Supporting equity in a remote learning environment

- Completed on 11/12/2023

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Differentiation in the classroom using the built-in tools in Office 365 and Windows

- Completed on 11/12/2023

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Simplify cloud procurement and governance with Azure Marketplace

- Completed on 11/12/2023

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Design a program launch strategy

- Completed on 11/12/2023

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Prepare for a program approval event

- Completed on 11/12/2023

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Design degree program curricula that implement certification

- Completed on 11/12/2023

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Define academic and industry requirements for implementing certifications in degree programs

- Completed on 11/12/2023

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Work with data source limits (delegation limits) in a Power Apps canvas app

- Completed on 11/11/2023

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Work with relational data in a Power Apps canvas app

- Completed on 11/11/2023

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Use custom connectors in a Power Apps canvas app

- Completed on 11/11/2023

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Connect to other data in a Power Apps canvas app

- Completed on 11/11/2023
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Use and understand Controls in a canvas app in Power Apps

- Completed on 11/11/2023
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Document and test your Power Apps application

- Completed on 11/11/2023
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Build a mobile-optimized app from Power Apps

- Completed on 11/11/2023

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Manage apps in Power Apps

- Completed on 11/11/2023

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Navigation in a canvas app in Power Apps

- Completed on 11/11/2023

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[How to build the UI in a canvas app in Power Apps]

- Completed on 11/11/2023

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[Customize a canvas app in Power Apps]

- Completed on 11/11/2023

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[Get started with Power Apps canvas apps]

- Completed on 11/11/2023

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How to build your first model-driven app with Dataverse

- Completed on 11/11/2023

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Configure forms, charts, and dashboards in model-driven apps

- Completed on 11/11/2023

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Get started with model-driven apps in Power Apps

- Completed on 11/11/2023

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Badge

[Create tables in Dataverse]

- Completed on 11/11/2023

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Badge

[Validation of Teams apps extensible across Microsoft 365]

- Completed on 11/10/2023

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[Add significant value to your Teams app]

- Completed on 11/10/2023
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[Publish Teams apps in Microsoft Teams store]

- Completed on 11/10/2023
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Badge

[Azure Health Bot built-in scenarios]

- Completed on 11/10/2023
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Language understanding in Azure Health Bot

- Completed on 11/10/2023

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Azure Health Bot case studies

- Completed on 11/10/2023

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Basic Azure Health Bot

- Completed on 11/10/2023

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Introduction to Azure Health Bot

- Completed on 11/10/2023

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Channelized Azure Health Bot

- Completed on 11/10/2023

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Integrate Azure Health Bot with a database

- Completed on 11/10/2023

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Enhanced Azure Health Bot

- Completed on 11/10/2023

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Azure Health Bot scenario templates

- Completed on 11/10/2023

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Deploy a customer service bot

- Completed on 11/10/2023

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Create a chatbot to help students learn geography

- Completed on 11/10/2023

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Introduction to responsible bots

- Completed on 11/10/2023

Badge

Detect objects in images with Azure AI Custom Vision

- Completed on 11/10/2023

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Badge

[Translate text and speech with Azure AI services]

- Completed on 11/10/2023

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Badge

[Classify images with Azure AI Custom Vision]

- Completed on 11/10/2023

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Badge

[Challenge project - Add image analysis and generation capabilities to your application]

- Completed on 11/10/2023

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Badge

Challenge project - Work with variable data in C#

- Completed on 11/10/2023

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Badge

Guided project - Work with variable data in C#

- Completed on 11/10/2023

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Badge

Modify the content of strings using built-in string data type methods in C#

- Completed on 11/10/2023

Badge

[Format alphanumeric data for presentation in C#]

- Completed on 11/10/2023

Badge

[Perform operations on arrays using helper methods in C#]

- Completed on 11/10/2023

Badge

Convert data types using casting and conversion techniques in C#

- Completed on 11/10/2023

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Badge

Choose the correct data type in your C# code

- Completed on 11/10/2023

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Badge

Challenge project - Create a mini-game

- Completed on 11/10/2023

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Badge

Guided project - Plan a Petting Zoo Visit

- Completed on 11/10/2023

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Badge

Create C# methods that return values

- Completed on 11/10/2023

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Badge

Create C# methods with parameters

- Completed on 11/10/2023

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Badge

[Write your first C# method]

- Completed on 11/10/2023

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[Challenge project - Debug a C# console application using Visual Studio Code]

- Completed on 11/10/2023

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[Guided project - Debug and handle exceptions in a C# console application using Visual Studio Code]

- Completed on 11/10/2023

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Badge

Create and throw exceptions in C# console applications

- Completed on 11/10/2023

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Implement exception handling in C# console applications

- Completed on 11/10/2023

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Badge

Implement the Visual Studio Code debugging tools for C#

- Completed on 11/10/2023

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Badge

[Review the principles of code debugging and exception handling]

- Completed on 11/10/2023

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Badge

[Evaluate Boolean expressions to make decisions in C#]

- Completed on 11/10/2023

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Badge

[Challenge project - Develop branching and looping structures in C#]

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Guided project - Develop conditional branching and looping structures in C#

- Completed on 11/10/2023

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Add looping logic to your code using the do-while and while statements in C#

- Completed on 11/10/2023

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[Iterate through a code block using for statement in C#]

- Completed on 11/10/2023

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Badge

[Control variable scope and logic using code blocks in C#]

- Completed on 11/10/2023

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[Branch the flow of code using the switch-case construct in C#]

- Completed on 11/10/2023

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Get started with Jupyter notebooks for Python

- Completed on 11/9/2023

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Python error handling

- Completed on 11/9/2023

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Python functions

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[Manage data with Python dictionaries]

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[Use 'while' and 'for' loops in Python]

- Completed on 11/9/2023

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[Introduction to lists in Python]

- Completed on 11/9/2023

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Use mathematical operations in Python

- Completed on 11/9/2023

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Use strings in Python

- Completed on 11/9/2023

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Use Boolean logic in Python

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Create and manage projects in Python

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Write your first Python programs

- Completed on 11/9/2023

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Get started with Python in Visual Studio Code

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Using GitHub Copilot with Python

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Using GitHub Copilot with JavaScript

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Introduction to GitHub Copilot for Business

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[Introduction to GitHub Copilot]

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[Deploy a model with GitHub Actions]

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Work with environments in GitHub Actions

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Work with linting and unit testing in GitHub Actions

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Trigger GitHub Actions with feature-based development

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Trigger Azure Machine Learning jobs with GitHub Actions

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Use an Azure Machine Learning job for automation

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Train and evaluate regression models

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Explore and analyze data with Python

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Train and evaluate deep learning models

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Train and evaluate clustering models

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Train and evaluate classification models

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Measure and optimize model performance with ROC and AUC

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Confusion matrix and data imbalances

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Select and customize architectures and hyperparameters using random forest

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Create and understand classification models in machine learning

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Refine and test machine learning models

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Train and understand regression models in machine learning

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Introduction to data for machine learning

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Build classical machine learning models with supervised learning

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Introduction to machine learning

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Create a clustering model with Azure Machine Learning designer

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[Create a classification model with Azure Machine Learning designer]

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[Create a regression model with Azure Machine Learning designer]

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[Use Automated Machine Learning in Azure Machine Learning]

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Explore developer tools for workspace interaction

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Explore Azure Machine Learning workspace resources and assets

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Explore Azure Storage for non-relational data

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Explore fundamentals of Azure Cosmos DB

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Explore relational database services in Azure

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Explore fundamental relational data concepts

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Fundamentals of Azure AI services

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Fundamentals of machine learning

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Fundamental AI Concepts

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Fundamentals of Knowledge Mining with Azure Cognitive Search

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Fundamentals of Azure AI Document Intelligence

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Introduction to Computer Vision with PyTorch

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Introduction to PyTorch

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Introduction to audio classification with PyTorch

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Introduction to Natural Language Processing with PyTorch

- Completed on 11/8/2023

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[Transcribe large amounts of audio data with Batch Transcription]

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[Fundamentals of optical character recognition]

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Fundamentals of Facial Recognition

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Fundamentals of Computer Vision

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Introduction to Azure Bot Service and Bot Framework Composer

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Fundamentals of question answering with the Language Service

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Fundamentals of Text Analysis with the Language Service

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Fundamentals of Azure AI Speech

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Fundamentals of conversational language understanding

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Use your own data with Azure OpenAI Service

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Generate images with Azure OpenAI Service

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Generate code with Azure OpenAI Service

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Apply prompt engineering with Azure OpenAI Service

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Build natural language solutions with Azure OpenAI Service

- Completed on 11/8/2023

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[Get started with Azure OpenAI Service]

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[Fundamentals of Responsible Generative AI]

- Completed on 11/8/2023

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Fundamentals of Azure OpenAI Service

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Fundamentals of Generative AI

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Describe monitoring tools in Azure

- Completed on 11/8/2023

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Describe features and tools for managing and deploying Azure resources

- Completed on 11/8/2023

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Describe features and tools in Azure for governance and compliance

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Describe cost management in Azure

- Completed on 11/8/2023

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Align requirements with cloud types and service models in Azure

- Completed on 11/8/2023

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[Move Azure resources to another resource group]

- Completed on 11/8/2023

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[Control and organize Azure resources with Azure Resource Manager]

- Completed on 11/8/2023

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Create custom roles for Azure resources with role-based access control (RBAC)

- Completed on 11/8/2023

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Manage access to an Azure subscription by using Azure role-based access control (Azure RBAC)

- Completed on 11/8/2023

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Secure your Azure resources with Azure role-based access control (Azure RBAC)

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Create Azure users and groups in Microsoft Entra ID

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Configure role-based access control

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Configure Azure Policy

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Configure subscriptions

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Configure user and group accounts

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Configure Microsoft Entra ID

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Allow users to reset their password with Microsoft Entra self-service password reset

- Completed on 11/8/2023

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Manage device identity with Microsoft Entra join and Enterprise State Roaming

- Completed on 11/8/2023

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Secure Microsoft Entra users with multifactor authentication

- Completed on 11/8/2023

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Implement and manage hybrid identity

- Completed on 11/8/2023

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Implement and manage external identities

- Completed on 11/8/2023

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Create, configure, and manage identities

- Completed on 11/8/2023

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Badge

[Implement initial configuration of Microsoft Entra ID]

- Completed on 11/8/2023

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Badge

[Investigate threats by using audit features in Microsoft 365 Defender and Microsoft Purview Standard]

- Completed on 11/8/2023

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Badge

Manage insider risk in Microsoft Purview

- Completed on 11/8/2023

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Badge

Respond to data loss prevention alerts using Microsoft 365

- Completed on 11/8/2023

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Badge

Utilize Vulnerability Management in Microsoft Defender for Endpoint

- Completed on 11/8/2023

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Configure for alerts and detections in Microsoft Defender for Endpoint

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Badge

Configure and manage automation using Microsoft Defender for Endpoint

- Completed on 11/8/2023

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Perform evidence and entities investigations using Microsoft Defender for Endpoint

- Completed on 11/8/2023

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Badge

[Perform actions on a device using Microsoft Defender for Endpoint]

- Completed on 11/8/2023

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[Perform device investigations in Microsoft Defender for Endpoint]

- Completed on 11/8/2023

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[Implement Windows security enhancements with Microsoft Defender for Endpoint]

- Completed on 11/8/2023

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Deploy the Microsoft Defender for Endpoint environment

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Protect against threats with Microsoft Defender for Endpoint

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Challenge project - Develop foreach and if-elseif-else structures to process array data in C#

- Completed on 11/8/2023

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Badge

Guided project - Develop foreach and if-elseif-else structures to process array data in C#

- Completed on 11/8/2023

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Badge

Create readable code with conventions, whitespace, and comments in C#

- Completed on 11/8/2023

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Badge

Store and iterate through sequences of data using Arrays and the foreach statement in C#

- Completed on 11/8/2023

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Badge

Add decision logic to your code using `if`, `else`, and `else if` statements in C#

- Completed on 11/8/2023

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Badge

Call methods from the .NET Class Library using C#

- Completed on 11/8/2023

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Install and configure Visual Studio Code

- Completed on 11/8/2023

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[Perform basic string formatting in C#]

- Completed on 11/8/2023

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[Store and retrieve data using literal and variable values in C#]

- Completed on 11/8/2023

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Write your first C# code

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Guided project - Calculate final GPA

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Guided project - Calculate and print student grades

- Completed on 11/8/2023

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[Perform basic operations on numbers in C#]

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[Explore Windows Editions]

- Completed on 11/8/2023

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[Explore the Enterprise Desktop]

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Examine data security and compliance in Microsoft 365 Copilot

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Implement Microsoft 365 Copilot

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Examine the Microsoft 365 Copilot design

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Manage records in Microsoft Purview

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Manage data retention in Microsoft 365 workloads

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Manage the data lifecycle in Microsoft Purview

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Configure DLP policies for Microsoft Defender for Cloud Apps and Power Platform

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Prevent data loss in Microsoft Purview

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Manage data loss prevention policies and reports in Microsoft 365

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Apply and manage sensitivity labels

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Protect information in Microsoft Purview

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Deploy Microsoft Purview Message Encryption

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Understand Microsoft 365 encryption

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Create and manage sensitive information types

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Classify data for protection and governance

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Introduction to information protection and data lifecycle management in Microsoft Purview

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Design an application architecture

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Design an Azure compute solution

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Design migrations

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Design network solutions

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Design a solution to log and monitor Azure resources

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Design authentication and authorization solutions

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Save money with Azure Reserved Instances

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Microsoft Azure Well-Architected Framework - Cost optimization

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Introduction to the Microsoft Azure Well-Architected Framework

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Microsoft Cloud Adoption Framework for Azure

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Describe Azure identity, access, and security

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Describe Azure storage services

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Describe Azure compute and networking services

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Describe the core architectural components of Azure

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[Describe cloud service types]

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[Describe the benefits of using cloud services]

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Describe cloud computing

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Publish an Angular, React, Svelte, or Vue JavaScript app with Azure Static Web Apps

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Create and publish a static web app with Gatsby and Azure Static Web Apps

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Publish a Blazor WebAssembly app and .NET API with Azure Static Web Apps

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Sign in users with Microsoft Entra ID in a Java web app

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Enable asynchronous messaging in Java apps by using JMS and Azure Service Bus

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Store application data with Azure Blob Storage

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Secure your Azure Storage account

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[Create an Azure Storage account]

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[Choose a data storage approach in Azure]

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Control Azure services with the CLI

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Fundamentals of network security

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Fundamentals of computer networking

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[Create a Windows virtual machine in Azure]

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[Provisioning a Linux virtual machine in Microsoft Azure]

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Plan your Linux environment in Azure

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[Build and run a web application with the MEAN stack on an Azure Linux virtual machine]

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[Manage hybrid workloads with Azure Arc]

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Administer and manage Windows Server IaaS Virtual Machine remotely

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Perform Windows Server secure administration

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Implement and manage Active Directory Certificate Services

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Manage advanced features of AD DS

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[Implement Group Policy Objects]

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[Manage AD DS domain controllers and FSMO roles]

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Deploy and manage Azure IaaS Active Directory domain controllers in Azure

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Implement hybrid identity with Windows Server

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Implement hybrid network infrastructure

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[Implement remote access]

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[Implement IP Address Management]

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[Implement Windows Server DNS]

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[Deploy and manage DHCP]

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[Implement DNS for Windows Server IaaS VMs]

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Implement Windows Server IaaS VM IP addressing and routing

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Hardening Windows Server

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Secure Windows Server user accounts

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Secure Windows Server DNS

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[Implement change tracking and file integrity monitoring for Windows IaaS VMs]

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[Configure BitLocker disk encryption for Windows IaaS Virtual Machines]

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[Create and implement application allowlists with adaptive application control]

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Manage Azure updates

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Improve your cloud security posture with Microsoft Defender for Cloud

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Secure your cloud apps and services with Microsoft Defender for Cloud Apps

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Safeguard your environment with Microsoft Defender for Identity

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Remediate risks with Microsoft Defender for Office 365

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[Protect your identities with Microsoft Entra ID Protection]

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[Mitigate incidents using Microsoft 365 Defender]

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Configure Azure Load Balancer

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Configure network routing and endpoints

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[Configure Azure Virtual Network peering]

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[Configure Azure DNS]

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[Configure network security groups]

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Improve application scalability and resiliency by using Azure Load Balancer

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Distribute your services across Azure virtual networks and integrate them by using virtual network peering

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Design an IP addressing schema for your Azure deployment

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[Configure Azure Application Gateway]

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[Design an enterprise governance strategy]

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[Configure Microsoft Entra Privileged Identity Management]

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Deploy Microsoft Entra ID Protection

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Use knowledge articles to resolve Dynamics 365 Customer Service cases

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Search and filter knowledge articles by using Dynamics 365 Customer Service

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Create knowledge management solutions in Dynamics 365 Customer Service

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Translate Dynamics 365 apps and documentation with Dynamics 365 Translation Service

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Challenge project - Architecting solutions for a new product line for customers

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Perform fit gap analysis

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Work with requirements for Microsoft Power Platform and Dynamics 365

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Propose a solution as a Solution Architect for Microsoft Power Platform and Dynamics 365

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Discover customer needs as a Solution Architect for Dynamics 365 and Microsoft Power Platform

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Becoming a solution architect for Dynamics 365 and Microsoft Power Platform

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Integration design for Dynamics 365 solutions

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Review the security model for your Dynamics 365 solutions

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Create a data migration strategy for Dynamics 365 solutions

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Gap solution design for Dynamics 365 solutions

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Plan a testing strategy for your Dynamics 365 solution

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Get started with Success by Design for Dynamics 365

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Cutover strategy for Dynamics 365 solutions

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Implement a performance strategy for Dynamics 365 solutions

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Implement common integration features in finance and operations apps

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Personalize finance and operations apps

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Work with workflows in finance and operations apps

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Feature management in finance and operations apps

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[Prepare to go-live with finance and operations apps]

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[Implement role-based security in finance and operations apps]

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[Plan and implement security in finance and operations apps]

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[Work with performance and monitoring tools in finance and operations apps]

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[Updates and upgrades for finance and operations apps]

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[Design and build mobile apps for finance and operations apps]

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Describe building automation with Microsoft Power Automate

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Identify foundational components of Microsoft Power Platform

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Identify data integration patterns and scenarios in finance and operations apps

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Consume business events in finance and operations apps

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[Explore extensions and the extension framework in finance and operations apps]

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[Implement application lifecycle management in finance and operations apps]

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[Prepare data for migration to finance and operations apps]

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[Get started with Lifecycle Services for finance and operations apps]

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[FastTrack Customer Success Program for finance and operations]

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[Get started with a finance and operations implementation project]

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[Use approval workflows in Dynamics 365 Business Central]

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[Create workflows in Dynamics 365 Business Central]

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[Migrate on-premises data to Dynamics 365 Business Central]

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[Migrate data to Business Central]

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Use AI Builder to process invoice forms in Power Automate

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[Integrate desktop flows with Outlook connector in Power Automate for desktop]

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[Connect a cloud flow to desktop flows in Power Automate for desktop]

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Manage release cadence in Azure Pipelines by using deployment patterns

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[Learn continuous integration with GitHub Actions]

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[Introduction to GitHub Actions]

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[Work with Azure Repos and GitHub]

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OneNote Class Notebook: A teacher's all-in-one notebook for students

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Converse, collaborate, and build community in Teams

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Organize content, create assignments, and assess learners' understanding in Teams

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Collaborate with colleagues through live Teams meetings and OneNote

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Work collaboratively with Staff and PLC Teams

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Assemble learners and staff with Microsoft Teams meetings

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Explore the benefits of becoming a Microsoft Educator Trainer

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Engage and amplify with Flip

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Digital storytelling with Microsoft Sway

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Engage teachers and students with Windows 11 and Windows 11 SE: Course 201

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Empower school leaders and tech-savvy educators with Windows 11 and Windows 11 SE: Course 101

- Completed on 11/6/2023

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Get started with OneNote

- Completed on 11/6/2023

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Badge

Flipped instruction with PowerPoint Recorder

- Completed on 11/6/2023

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Badge

Structure Teams through channels, tabs, files, and apps

- Completed on 11/6/2023

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Badge

Empower every student with an inclusive classroom

- Completed on 11/6/2023

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Badge

Accessibility: Build the foundation for inclusive learning

- Completed on 11/6/2023

Badge

Teach forward: Best strategies for hybrid, remote, and blended learning

- Completed on 11/6/2023

924.

Badge

Empower educators to explore the potential of artificial intelligence

- Completed on 11/6/2023

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completed

Products

Find a product

- .NET
  - Azure
  - Dynamics 365
- Excel
- GitHub
- HoloLens

- [ ] Industry Solutions
- [ ] Microsoft 365
- [ ] Microsoft Authentication Library
- [ ] Microsoft Copilot
- [ ] Microsoft Defender
- [ ] Microsoft Endpoint Manager
- [ ] Microsoft Entra
- [ ] Microsoft Fabric
- [ ] Microsoft Graph
- [ ] Microsoft Intune
- [ ] Microsoft Power Platform
- [ ] Microsoft Priva
- [ ] Microsoft Purview
- [ ] Microsoft Teams
- [ ] Microsoft Viva
- [ ] Office 365
- [ ] OneDrive
- [ ] OneNote
- [ ] Outlook
- [ ] PowerPoint
- [ ] Quantum Development Kit
- [ ] SQL Server
- [ ] Surface

- Visual Studio
- Visual Studio App Center
- Visual Studio Code
-
  - Windows
- Windows Server
- Word

Roles

Find a role

- Administrator
- AI Edge Engineer
- AI Engineer
- App Maker
- Auditor
- Business Analyst
- Business Owner
- Business User
- Data Analyst
- Data Engineer
- Data Scientist
- Database Administrator
- Developer
- DevOps Engineer
- Functional Consultant
- Higher Education Educator
- Information Protection and Compliance Administrator
- K-12 Educator
- Network Engineer
- Privacy Manager

- Risk Practitioner
- School Leader
- Security Engineer
- Security Operations Analyst
- Service Adoption Specialist
- Solution Architect
- Startup Founder
- Student
- Support Engineer
- Technology Manager

Levels

- Beginner
- Intermediate
- Advanced

Subjects

Find a subject

- Application development
  - Artificial intelligence
  - Business applications
  - Data management
- Security

anscript

Records may take up to 24 hours to update.

Transcript

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Modules completed

924

Training hours completed

738 hr 43 min

Modules completed

N/A in the module assessment result column means either the module assessment doesn't exist or there's no pass record for it. All modules in this table are complete.

Module title	Description	Completed on	Duration	Module Assessment Result
Introduction to Azure Load Balancer	This module explains what Azure Load Balancer does, how it works, and when you should choose to use Load Balancer as a solution to meet your organization's needs.	Jan 10, 2025	18 min	N/A
Enhance your service availability and data locality by using Azure Traffic Manager	Discover how Azure Traffic Manager provides DNS load balancing for your application to improve the performance and availability of your	Jan 10, 2025	29 min	N/A

Module title	Description	Completed on	Duration	Module Assessment Result
	application.			
Improve your reliability with modern operations practices: An introduction	Discover a map for navigating reliability challenges and sustainably achieving the appropriate level of reliability in your systems, services, and products.	Jan 10, 2025	10 min	N/A

Expand your AI skills based on your role

Get ready to use Copilot and build AI apps. Discover the transformational experiences you can implement by using Microsoft's AI apps and services. Select a role to explore focused skilling resources.

- Developer
- Business or technical leader
- Business user
- IT professional
- Data scientist
- Data professional
- Low-code developer
- Security professional

Developer

Accelerate app development by using GitHub Copilot

Find out how to use GitHub Copilot to interpret and document code, author new code features more efficiently, and refactor, debug, and test code.

Build AI apps with Azure Services and best practices

Get the details on designing and building a cloud-native AI app, developing a back-end database, and integrating Azure AI services into applications.

Build and extend copilots with Microsoft Copilot Studio

Use Microsoft Copilot Studio to create conversational AI solutions, and learn how to build actions that extend Microsoft 365 Copilot.

Extend Microsoft 365 Copilot (for developers)

Use Copilot Studio actions, and learn about building plugins and connectors for Microsoft 365 Copilot. Discover how to choose the right option for your use case.

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